

2003 0215 HAZARDOUS WASTE MANAGEMENT PLAN
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Alameda County Waste Management Authority

REVISED FINAL PLAN

August 1991

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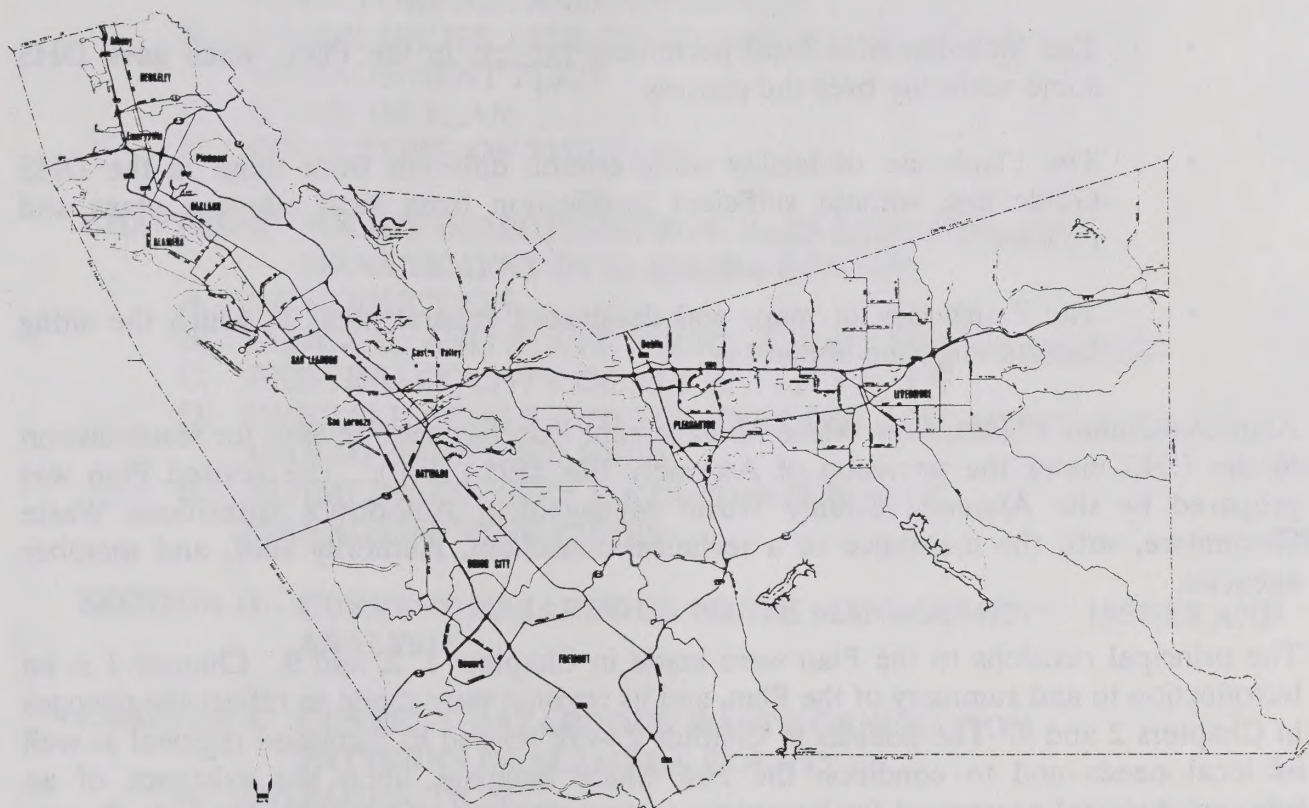
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HAZARDOUS WASTE MANAGEMENT PLAN

ALAMEDA COUNTY



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NOTE TO READERS

The original Alameda County Hazardous Waste Management Plan, dated March 1989, was approved by local jurisdictions and submitted to the California Department of Health Services (DHS) in 1989. The DHS did not approve Alameda County's 1989 Plan, or the Plans of 44 other California counties, primarily for the following reasons:

- The inclusion of the Fair Share principal, as defined by the County Supervisors Association of California, which emphasizes local, as opposed to regional, needs for hazardous waste facilities
- The inclusion of a local permitting process in the Plan, which gave DHS some authority over the process
- The Plan's use of facility siting criteria different from those in the DHS Guidelines, without sufficient justification from local adopted plans and policies
- The Plan's lack of maps and designated general areas in which the siting criteria might be applicable

Alameda County's Hazardous Waste Management Plan has been revised for resubmission to the DHS under the provision of Assembly Bill 2595 (1990). The revised Plan was prepared by the Alameda County Waste Management Authority's Hazardous Waste Committee, with the assistance of a technical consultant, Authority staff, and member agencies.

The principal revisions to the Plan were made in Chapters 1, 2, and 9. Chapter 1 is an introduction to and summary of the Plan, and its revision were made to reflect the changes in Chapters 2 and 9. The policies in Chapter 2 were revised to recognize regional as well as local needs and to condition the Fair Share language upon the existence of an interjurisdictional agreement for hazardous waste management between Alameda County and one or more other jurisdictions. Chapter 9, which included the facility siting process and the siting criteria, was the most extensively revised. The siting process itself was removed, leaving authority with local jurisdictions, and the siting criteria were revised through extensive Committee discussions and negotiations with DHS. Many of the siting criteria could not be mapped because of insufficient existing information and the small scale of the maps. Those criteria that could be mapped were used to create composite maps showing general areas in which hazardous waste facilities might be located if they can survive stringent site-specific permitting processes and environmental reviews required by local jurisdictions for major projects. The remaining chapters include the original analysis of hazardous waste generation, existing capacity, facility needs, and implementation; the Committee and DHS agreed that they needed no substantial revisions.

CONTENTS

	<u>Page</u>
SECTION I - BACKGROUND AND PURPOSE	1-1
CHAPTER 1. INTRODUCTION AND SUMMARY	1-1
A. ALAMEDA COUNTY'S HAZARDOUS WASTE MANAGEMENT PLAN: PURPOSE AND APPROACH	1-1
B. MAJOR ISSUES AFFECTING THE HAZARDOUS WASTE MANAGEMENT PLAN	1-6
C. SCOPE OF PLAN	1-8
D. STRUCTURE OF THE PLAN	1-9
CHAPTER 2. POLICY DIRECTIONS FOR HAZARDOUS WASTE MANAGEMENT IN ALAMEDA COUNTY	
A. INTRODUCTION	2-1
B. FEDERAL AND STATE POLICIES AND REQUIREMENTS ...	2-1
C. EXISTING COUNTY GOALS AND POLICIES	2-4
D. OVERALL GOALS AND POLICIES FOR HAZARDOUS WASTE MANAGEMENT POLICIES	2-5
E. ALAMEDA COUNTY HAZARDOUS WASTE MANAGEMENT POLICIES	2-6
SECTION II - CURRENT HAZARDOUS WASTE MANAGEMENT: ISSUES AND ANALYSIS	
CHAPTER 3. CURRENT HAZARDOUS WASTE GENERATION PATTERNS IN ALAMEDA COUNTY	3-1
A. INTRODUCTION	3-1
B. DATA SOURCES AND LIMITATIONS	3-1
C. OVERALL TYPES AND VOLUMES OF HAZARDOUS WASTES	3-3
D. WASTE OILS	3-7
E. MANIFESTED HAZARDOUS WASTES	3-7
F. SMALL GENERATOR WASTES	3-16
G. WASTES FROM LEAKING UNDERGROUND TANKS	3-38
H. HOUSEHOLD HAZARDOUS WASTES	3-38
I. CONCLUSIONS	3-41

CONTENTS (Continued)

CHAPTER 4. CURRENT HAZARDOUS WASTE MANAGEMENT PRACTICES IN ALAMEDA COUNTY	4-1
A. OVERVIEW	4-1
B. PAST PRACTICES	4-1
C. ONSITE WASTE MANAGEMENT	4-2
D. OFFSITE MANAGEMENT PRACTICES IN FACILITIES OUTSIDE OF ALAMEDA COUNTY	4-5
E. SMALL QUANTITY GENERATORS: PRACTICES AND SPECIAL NEEDS	4-5
F. MANAGEMENT OF HOUSEHOLD HAZARDOUS WASTES	4-8
G. TRANSPORTATION OF HAZARDOUS WASTES	4-12
 CHAPTER 5. CURRENT HAZARDOUS WASTE MANAGEMENT PROGRAMS AND COORDINATION ACTIVITIES	 5-1
A. STATE DEPARTMENT OF HEALTH SERVICES (DHS)	5-1
B. COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH (DEH)	5-2
C. SANITARY DISTRICTS AND PUBLICLY-OWNED TREATMENT WORKS	5-5
D. CITIES	5-6
E. OTHER HAZARDOUS MATERIALS AND WASTES PROGRAMS	5-7
F. COORDINATION WITH COUNTY SOLID WASTE PROGRAMS	5-8
 SECTION III - FUTURE HAZARDOUS WASTE MANAGEMENT ISSUES AND ANALYSIS	
 CHAPTER 6. MAJOR FACTORS AFFECTING FUTURE HAZARDOUS WASTE MANAGEMENT	 6-1
A. ECONOMIC GROWTH	6-1
B. HAZARDOUS WASTE MANAGEMENT CHANGES	6-1
C. DEMAND FOR NEW OFFSITE FACILITIES	6-2
 CHAPTER 7. HAZARDOUS WASTE GENERATION PROJECTIONS	 7-1
A. FUTURE ECONOMIC DEVELOPMENT	7-1
B. ALTERNATIVE WASTE STREAM PROJECTIONS	7-1

CONTENTS (Continued)

CHAPTER 8. NEED FOR ADDITIONAL CAPACITY	8-1
A. BASIC HAZARDOUS WASTE MANAGEMENT OPTIONS AND ECONOMIES OF SCALE	8-1
B. ALTERNATIVE PROJECTIONS OF ALAMEDA COUNTY WASTES APPROPRIATE FOR TREATMENT ONSITE OR OFFSITE	8-2
C. POTENTIAL EXPANSION OF EXISTING KEY FACILITIES ...	8-7
D. IMPLICATIONS FOR HAZARDOUS WASTE MANAGEMENT CAPACITY IN ALAMEDA COUNTY	8-11
CHAPTER 9. MEETING CAPACITY NEEDS	9-1
A. INTRODUCTION	9-1
B. SITING CRITERIA	9-1
C. CRITERIA MAPPING AND DESIGNATION OF GENERAL AREAS	9-8
D. THE APPEALS PROCESS	9-8

SECTION IV - IMPLEMENTATION STRATEGY

CHAPTER 10. HAZARDOUS WASTE IMPLEMENTATION PROGRAM	10-1
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TABLES

1-1	Hazardous Materials Program Matrix	1-10
3-1	Hazardous Waste Summary - 1986	3-4
3-2	Hazardous Waste Manifest Data - 1986	3-6
3-3	Waste Oil and Solvent Recycling Facilities in Alameda County, 1986	3-8
3-4	Waste Stream Generation by City - 1986 Manifest Data	3-9
3-5	Waste Stream by Geographic Location	3-12
3-6	Largest Hazardous Waste Generators in Alameda County	3-15
3-7	Imports and Exports of Hazardous Waste Alameda County - 1986	3-17
3-8	Hazardous Wastes Entering Vine Hill/Baker Facility from Alameda County Generators	3-19
3-9	Largest Alameda County Users of Vine Hill/Baker, 1986	3-22
3-10	No Survey Method Summary 1986 County Business Patterns - Alameda County	3-24
3-11	Distribution of Small Generators by City - Alameda County	3-25
3-12	Small Quantity Generator Waste Stream - Alameda County	3-27
3-13	Small Generators by Size of Firm	3-29
3-14	Scope of Telephone Survey - Alameda County Small Generators	3-32

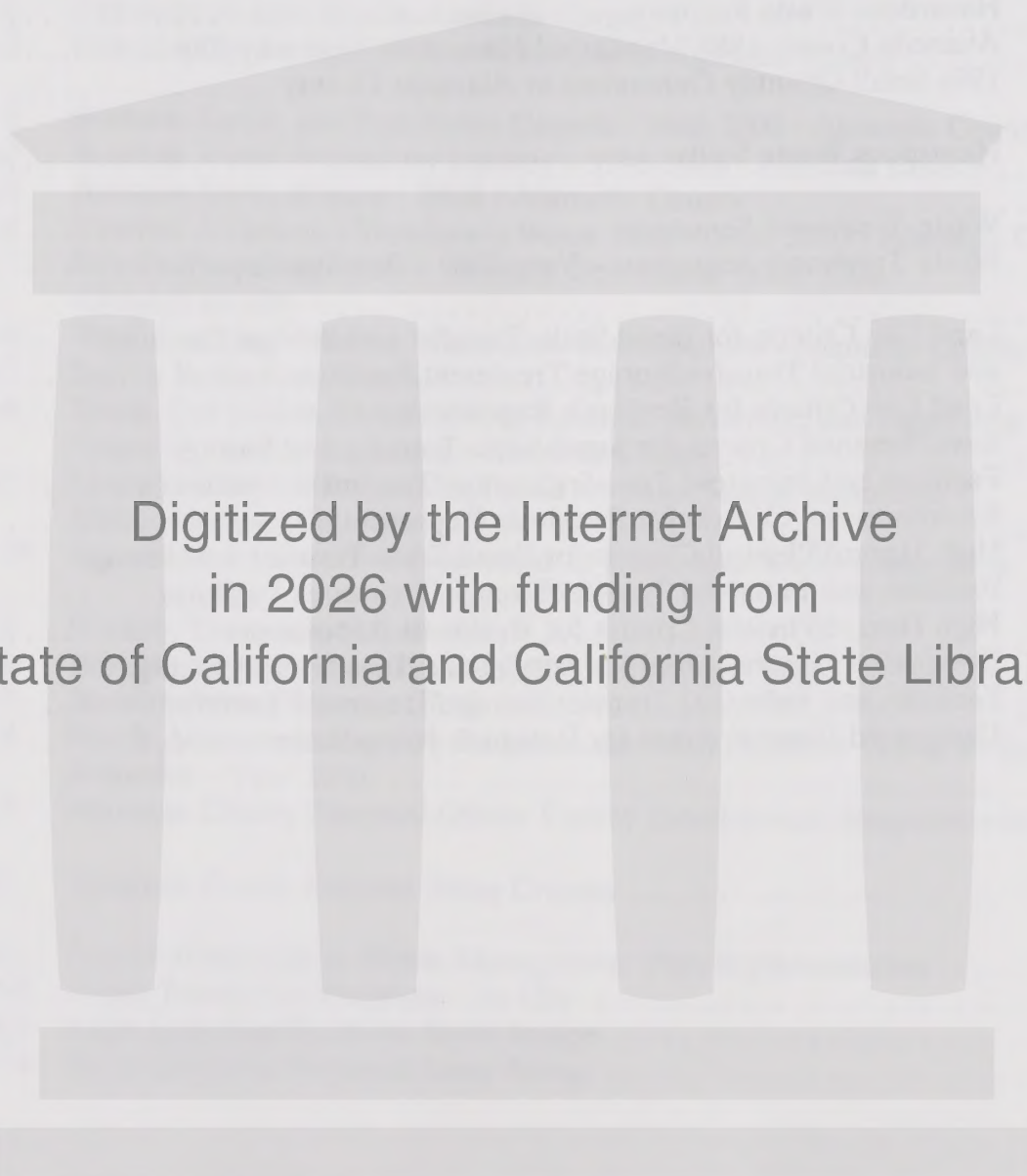
CONTENTS (Continued)

3-15	Contaminated Soil from Underground Tank Cleanups	3-39
3-16	Total Hazardous Waste Generation, by Type - 1986 - Alameda County ..	3-42
3-17	Total Hazardous Waste Generation, by City - 1986 - Alameda County ..	3-43
4-1	Remedial Action Sites in Alameda County	4-3
4-2	Household Hazardous Waste Collection in Alameda County	4-9
7-1	Business Sector and Population Growth - 1986-2000 - Alameda County ...	7-2
7-2	Baseline Waste Growth by Industry - 1986-2000 - Alameda County	7-4
7-3	Baseline Waste Stream - 2000 - Alameda County	7-7
7-4	Baseline Summary - Manifested Waste Only - Year 2000 - Alameda County	7-8
7-5	Baseline Summary - Small Quantity Generators -Year 2000 - Alameda County	7-9
7-6	Total Projected Baseline Hazardous Waste Stream - Alameda County ..	7-10
7-7	Source Reduction Potential	7-11
7-8	Waste Generation 2000, Showing Baseline, Moderate, and Aggressive Source Reduction Scenarios - Alameda County	7-12
7-9	Hazardous Waste Projections Based on Strict Source Reduction - 2000 - Alameda County	7-14
7-10	Summary of Alternative Projections of Hazardous Waste Generation ...	7-16
8-1	Generic Treatment Efficiencies	8-5
8-2	Baseline Capacity Requirements, 2000 - Tons per Year	8-8
8-3	Baseline Waste Stream - 2000	8-9
8-4	Needs Assessment Capacity Requirements with Different Waste Reduction Scenarios - Year 2000	8-10
8-5	Alameda County Potential Offsite Facility Development Requirements ..	8-12
9-1	Alameda County General Siting Criteria	9-3
10-1	Proposed Hazardous Waste Management Plan Implementation	10-5
10-2	Toxics Prevention Programs - by City	10-8
10-3	Implementation Program, Short Range	10-17
10-4	Implementation Program, Long Range	10-20

CONTENTS (Continued)

FIGURES

1-1	Hazardous Waste Management Hierarchy	1-4
3-1	Hazardous Waste Summary	3-5
3-2	Alameda County 1986 Manifested Hazardous Waste by City	3-11
3-3	1986 Small Quantity Generators in Alameda County	3-30
4-1	Hazardous Waste Spills	4-14
8-1	Waste Treatment Sequences	8-4
8-2	Waste Treatment Sequences - Year 2000 - Baseline Capacities	8-6
9-1	Land Use Criteria for Small-Scale Transfer and Storage Facilities and Industrial Transfer/Storage/Treatment Facilities	9-9
9-2	Land Use Criteria for Residuals Repositories	9-10
9-3	Environmental Criteria for Small-Scale Transfer and Storage Facilities and Industrial Transfer/Storage/Treatment Facilities	9-11
9-4	Environmental Criteria for Residuals Repositories	9-12
9-5	High Hazard/Physical Criteria for Small-Scale Transfer and Storage Facilities and Industrial Transfer/Storage/Treatment Facilities	9-13
9-6	High Hazard/Physical Criteria for Residuals Repositories	9-14
9-7	Designated General Areas for Small-Scale Transfer and Storage Facilities and Industrial Transfer/Storage/Treatment Facilities	9-15
9-8	Designated General Areas for Residuals Repositories	9-16



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SECTION I
BACKGROUND AND PURPOSE

CHAPTER 1
INTRODUCTION AND SUMMARY

**A. ALAMEDA COUNTY'S HAZARDOUS WASTE
MANAGEMENT PLAN: PURPOSE AND APPROACH**

PURPOSE

The purpose of the County Hazardous Waste Management Plan is to develop and implement hazardous waste management policies for the management of hazardous waste in Alameda County. The primary focus of the plan is to encourage the reduction of the amount of hazardous waste that is generated in the County to the greatest extent feasible to minimize the number of hazardous waste management facilities that are needed to manage the waste. Alameda County, its cities and special districts will act to provide for the safe, effective management of hazardous wastes generated within the County. As stated in Policy 14, Chapter 2 of this Plan, new offsite hazardous waste management facilities will be primarily limited to a scale necessary to meet the hazardous waste management needs of Alameda County; larger facilities may be permitted in accordance with interjurisdictional agreements reached between Alameda County and other jurisdictions or upon determination of the local governing body that the project meets local planning criteria and serves public needs. Alameda County, its cities, and special districts recognize their collective responsibility to cooperate with other governments in the region and the state in planning for the effective management of hazardous wastes generated in the region and the state in accordance with the hazardous waste management hierarchy described later in this chapter.

Recent state and federal laws mandate the phase-out of land disposal of untreated hazardous wastes over the next few years. Alternative management approaches must be implemented by May 1990, so that land disposal can be ended.

GOALS AND OBJECTIVES

Alameda County's Hazardous Waste Management Plan dated March 1989 was developed by the County Waste Management Authority's Hazardous Waste Committee and an Advisory Committee, with the assistance of a technical consultant, county staff, and the cities. A separate programmatic Environmental Impact Report (EIR) on the plan was prepared to meet the requirements of the California Environmental Quality Act (CEQA). The 1989 Plan was not approved by the California Department of Health Services (DHS) for a variety of reasons. The DHS also rejected the Hazardous Waste Management Plans of 44 other California counties for many of the same reasons.

Alameda County's Hazardous Waste Management Plan has been revised for resubmission to the DHS under the provisions of Assembly Bill 2595 (1990). The revised Plan was prepared by the Alameda County Waste Management Authority's Hazardous

Waste Committee, with the assistance of a technical consultant, the Authority staff, and the cities. To meet the requirements of the California Environmental Quality Act, a Mitigated Negative Declaration has been prepared.

The plan's goals are, first, to protect the public health, safety, and welfare, and environment through eliminating land disposal of untreated hazardous wastes; and second, to maintain economic vitality by helping businesses and households reduce production of hazardous wastes and manage their remaining wastes effectively. Economic well being and quality of life are related to industrial, commercial, and household activities within the county and also have a relationship to mismanagement of wastes. Waste reduction and waste recycling should be the goal of industry, small business and households. The overall objectives of the planning process include:

- Accepting local responsibility to plan for effective management of hazardous wastes produced by local businesses and households
- Encouraging maximum feasible source reduction
- Involving the public in planning and decisions on facility siting
- Determining local levels of source reduction, and resulting needs for alternative treatment methods and facilities to manage hazardous wastes
- Identifying designated general areas in which hazardous waste facilities might be able to be located, based on siting criteria
- Encouraging development of needed facilities by the private sector

APPROACH

The Alameda County Hazardous Waste Plan was prepared in response to AB 2948 (Tanner, 1986) which established procedures for preparation of the plan. AB 2948 has three major components: a planning process; a hierarchy of waste management strategies; and a facility siting process.

- The Planning Process requires each county to assess its current hazardous waste stream, and make projections to 2000. Existing waste management approaches and facilities within and outside the county are evaluated, and future needs projected for expanded or new waste management facilities. Special attention is paid to the problems of small quantity waste generators, household hazardous wastes, and waste transportation issues. Each county develops criteria to identify general areas appropriate for facility locations, and involve the public in preparing the county plan and siting criteria.

The plan must be approved by a majority of cities containing a majority of the population of the incorporated area of the county, by the Waste Management Authority, and by the Board of Supervisors; it must also be approved by the State Department of Health Services. Once approved, the County and all cities must incorporate the Plan into their general plans within 180 days.

- A Hierarchy of Waste Management Strategies is encouraged by AB 2948. Figure 1-1 shows this hierarchy graphically. The hierarchy urges that the first priority be to reduce hazardous wastes during manufacturing (and service and household) activities through the use of fewer hazardous materials, material substitutions, process modifications, and housekeeping measures. Once source reduction has been pursued to the extent technologically and economically feasible, the second priority is to recycle and reuse wastes. Remaining wastes and the residuals left by recycling would then be treated or incinerated. Where hazardous waste is amenable to forms of treatment other than incineration, these other forms of treatment should be given preference over incineration. The treatment residuals not capable of further reduction would be placed in secure land disposal units. No untreated wastes will be placed on or in the land.
- AB 2948 establishes a new Facility Siting Process. Procedures to speed and coordinate the permitting process at the state and local levels are provided. The bill requires that all proposed offsite hazardous waste management facilities, such as new treatment units, be consistent with the Plan's stated goals, policies, and siting criteria. A Local Assessment Committee, supported by a technical consultant, negotiates with a facility developer on behalf of the host community prior to the request for a land use permit.

As discussed in Chapter 9 of this Plan, local government land use decisions on facility proposals may be appealed to a new seven-member state board. If the board finds that the proposed facility would be consistent with the reasonable restrictions contained in the approved Plan, the local decision may be overridden and the facility granted the necessary land use permit.

This plan provides criteria for identifying environmentally suitable locations for needed facilities. The process is intended to reinforce traditions of local home rule, and yet still overcome the "Not in my backyard" (NIMBY) problem. This delicate balance is achieved by encouraging counties to develop appropriate, responsible plans based on equity and local need; to have these plans approved by the State and by the cities in their jurisdictions; and to hold those local jurisdictions accountable through the new Appeal Board for approval of facility siting proposals in environmentally sound locations, consistent with the approved County Plan.

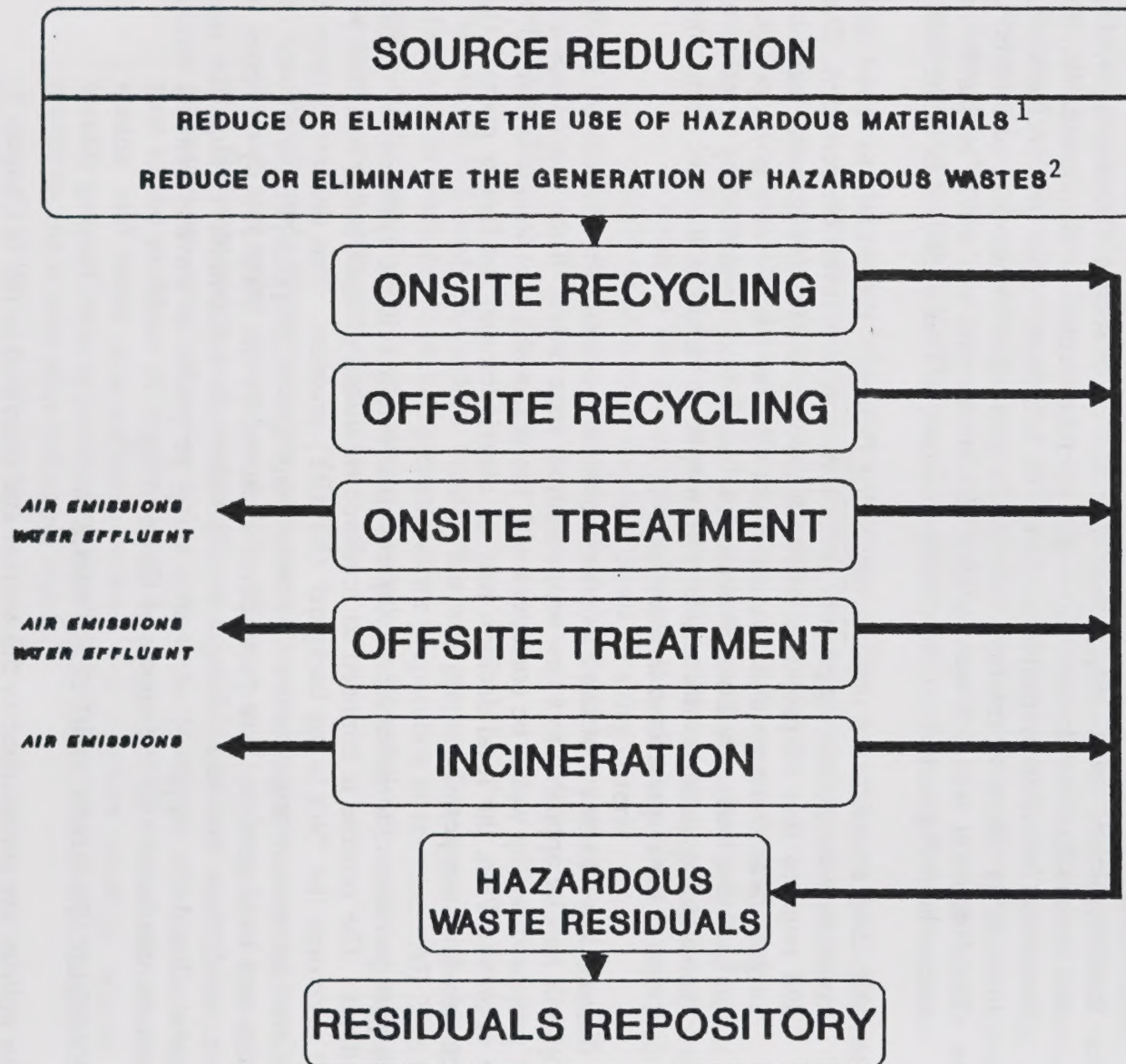
KEY POLICIES DIRECTING THE PROCESS

Plan policies are summarized in this section and described in full in Chapter 2.

- The Plan's top priority is to promote aggressive waste reduction, including reduction in the use of toxic materials. New firms entering the county (or those seeking to expand existing facilities) shall demonstrate how they will comply with the waste management hierarchy as a condition of receiving land use and business permits. All existing hazardous waste generators will be required to

Figure 1-1

HAZARDOUS WASTE MANAGEMENT HIERARCHY



¹ • Materials Substitution
• Product Substitution

² • Technology or Equipment
• Improved Plant Operations
• In-process Recycling

implement the hazardous waste management hierarchy to the maximum extent feasible both technically and economically.

- Provide a sound basis for source reduction and for planning and siting needed new facilities which offer alternatives to continued reliance on disposal of hazardous wastes in the air, water, or land.
- Encourage active involvement of the public, large and small industry, and civic and environmental organizations, in the development and implementation of this plan.
- Promote widespread ongoing education of citizens on hazardous materials and waste management issues. A program will be developed to educate households about their hazardous materials and wastes and the effects when they are discarded into solid waste landfills; this program should include ways to collect and treat household hazardous wastes effectively.
- Provide special attention to small firms and small generators which have special needs. Programs to provide technical and financial assistance will allow small firms to pursue waste reduction and the hierarchy. Such programs will be financially self-sustaining, yet with fees designed not to impose such a burden that it discourages participation and responsible hazardous waste management.
- Encourage onsite treatment of hazardous wastes in preference to offsite treatment. Where needed, however, offsite facilities should be located as close as practical to the sources of hazardous waste generation--within the limits reasonably imposed by economies of scale, market service areas, and environmental suitability (including consistency with this plan's siting criteria). In particular, transfer stations meet an important need, especially for the county's many small businesses.
- Recognize local agency responsibility to assist other governments in the region and state in planning for the effective management of hazardous wastes generated in the region and state in accordance with the hazardous waste management hierarchy. Local agencies will participate in and support efforts designed to allocate and develop facilities among all jurisdictions according to interjurisdictional agreements, each facility's environmental suitability, and each facility's economic viability.
- Local agencies should prepare to approve siting proposals in environmentally acceptable locations for modern treatment facilities, transfer stations, and residuals repositories sized to meet local needs and/or commitments in interjurisdictional agreements.

B. MAJOR ISSUES AFFECTING THE HAZARDOUS WASTE MANAGEMENT PLAN

In addition to the policies, a number of critical issues affect hazardous waste management, and preparation and implementation of the plan in Alameda County. The county's current and future hazardous waste stream must be understood and appropriate criteria for designating general areas in which facilities might be located must be developed and applied. Barriers include public concern over proposed nearby facilities, shortages in funding for data and staff, and the lack of local government experience in implementing the Tanner legislation. The public must be involved throughout the process.

Understanding County Current and Future Waste Streams: A major requirement of the planning effort involves evaluating the types and amounts of hazardous wastes currently being generated within Alameda County, and estimating production through 2000. This is a difficult task, given the uncertainties associated with current data and with economic projections and the complexities of new treatment standards being implemented.

Siting Criteria and Designation of General Areas: Under AB 2948, the siting criteria apply only to offsite, multi-user hazardous waste management facilities, including transfer stations, recycling and treatment facilities, incinerators, and residuals repositories. The siting criteria (Chapter 9) are based on the criteria in the DHS Guidelines for preparation of County Hazardous Waste Management Plans, but they reflect the characteristics and adopted policies of Alameda County as well. As recognized in the DHS Guidelines, some of the criteria are exclusionary, meaning that some or all types of hazardous waste facilities cannot be located in areas identified by these criteria. Others of the criteria are conditional, meaning that some or all types of facilities may be located there if they can meet certain conditions.

AB 2948 and the DHS Guidelines require that the County Hazardous Waste Management Plan must either show specific sites for hazardous waste facilities, or contain siting criteria and designated general areas in which hazardous waste facilities may be able to be located. The DHS requires that the Plans contain maps showing the county's siting criteria applied across the county area (to the extent that the criteria can be mapped) and composite maps showing designated general areas for different types of hazardous waste facilities. The Alameda County Hazardous Waste Management Plan contains maps showing designated general areas for different types and sizes of hazardous waste facilities. It is important to recognize that the designated general areas represent only the results of a first screening of county areas to eliminate those areas in which hazardous waste facilities can clearly not be located (such as wetlands). The fact that the Plan maps show designated general areas does not provide assurance to a facility developer that the facility will be permitted to locate in that area.

When a hazardous waste facility is proposed, the facility developer must demonstrate through the local permit process and environmental review that the specific facility at the specific site is appropriate and will be protective of public health and welfare and the environment. The facility developer must apply for a land use permit from the local jurisdiction (the city, or the county if in an unincorporated area). The local planning commission will review the proposal, and set forth its recommendations to the local government. The local government, with assistance from the developer of the proposed new facility, will comply with CEQA. A new Local Assessment Committee to be appointed by the local governing body (under AB 2948) will meet with the developer, assess the proposal, discuss appropriate mitigation strategies, and place its recommendations before the local government. A new statute allows the local government to acquire as compensation up to 10 percent of the gross receipts of the hazardous waste management facility.

The facility developer will also have to apply for all necessary federal and state permits to construct and operate the facility; including permits from EPA, DHS, RWQCB, and BAAQMD, and possibly from the Corps of Engineers, and BCDC. New mechanisms for accelerated permit processing introduced by AB 2948 will ensure coordination and assistance from the Governor's Office of Planning and Research (OPR).

AB 2948 created a seven-member State Appeal Board composed of three state officials--the heads of Health Services, Air Resources Board, and Water Resources Control Board; a county supervisor and city council member serving statewide; and a county supervisor and city council member from the local area. Local decisions can be appealed by:

- the facility proponent, if the locality rejects the proposal (or approves it with onerous conditions tantamount to rejection); or
- any interested party (a person who participated in local hearings) concerned about the facility's impact on public health or the environment. The appeal must be based solely on the grounds that the conditions imposed on the project by land use decisions do not adequately protect the public health, safety, or welfare.

A developer must have all required state and federal permits which can be obtained prior to construction before the appeal can proceed.

Implementation: An Implementation program is included in this plan, as required by AB 2948. The strategy includes the following elements.

- Public participation and education programs
- Source reduction program
- Meeting small generators' special needs
- Dealing with household hazardous wastes
- Ongoing data collection and analysis
- Siting areas for new needed offsite, multi-user facilities

The Waste Management Authority (JPA) will continue to hold primary responsibility for the long-term process of hazardous waste planning and management in Alameda County. Chapter 10 includes a short and long range implementation program.

Public Participation: Involvement is sought from all sectors of the public, business, and local governments throughout the process of developing and implementing this plan. With release of the draft plan in March 1988, meetings were held throughout the county. Each city council received a public briefing; and a number of formal public hearings were held. Copies of the draft plan were available in public libraries, in County Supervisors' offices, and in city halls.

In sum, the planning process has followed a logical sequence of steps:

- Identify key issues for Alameda County hazardous waste management to 2000
- Set goals, policies, objectives
- Compile best data available
- Conduct public involvement/education
- Stimulate maximum feasible source reduction
- Determine needs for new facilities in the context of an interjurisdictional agreement
- Lay the basis for private sector siting decisions (and review the need for greater government role)
- Set milestones for actions by public agencies and the private sector
- Provide for effective program coordination

With these actions underway, Alameda County and the thousands of hazardous waste generators within it should be in a strong position to accelerate source reduction, phase out land disposal, and site those facilities needed to manage these wastes into the 21st century.

C. SCOPE OF PLAN

KINDS OF WASTES

This plan covers hazardous wastes: not municipal solid wastes (garbage), not radioactive wastes, not sewage sludge, not groundwater quality. Under California's Hazardous Waste Control Law (HWCL), passed in 1972 and amended on numerous occasions since, hazardous wastes are those which: cause increased mortality, serious irreversible illness or incapacitating reversible illness; or which pose substantial hazards to human health or the environment. DHS has issued regulations for determining hazardous wastes based on: toxicity; bioaccumulation; ignitability; reactivity; and corrosivity.

Extremely hazardous wastes, under DHS rules, are those which would cause death, disabling personal injury, or serious illness.

Restricted hazardous wastes form a subclass for purposes of bans on land disposal, and include hazardous wastes with cyanides, PCBs, strong acids, concentrated heavy metals, and so on. The plan covers past wastes, present wastes, and future wastes. It emphasizes protection of future needs (based on maximum feasible source reduction), working from 1986 data.

STATUTORY COVERAGE

This plan is primarily concerned with those laws specifically directed at hazardous wastes. These center around the general framework created by the California Hazardous Waste Control Law, which predated the analogous federal legislation, embodied in the Resource Conservation and Recovery Act of 1976 (RCRA)--which itself incorporates and expands a number of HWCL provisions. Similarly, a number of the expansions of the HWCL have been incorporated into federal law through subsequent amendments to RCRA.

The California Department of Health Services (DHS) is the state's lead agency implementing HWCL, and those provisions of RCRA which can be assumed by states that operate substantially equivalent programs. Between 1981 and January 1986, DHS implemented RCRA provisions under interim authorization from the EPA, which is the national lead agency for RCRA. This interim authorization expired in January 1986, but DHS continues to implement HWCL provisions under a reversion agreement with EPA while the state seeks final authorization. California allows county health departments the option to implement certain HWCL provisions regulating hazardous waste generators, under terms of Memoranda of Understanding (MOUs) with DHS. Alameda County Department of Environmental Services has an MOU with DHS.

Table 1-1 prepared in 1988 for the California Partnership for Safe Hazardous Waste Management provides a concise summary of these levels of necessary program coordination.

D. STRUCTURE OF THE PLAN

The Alameda County Hazardous Waste Management Plan has six sections. Section I is designed to provide the reader with background on hazardous waste issues, relevant legislation, and the planning process (Chapter 1). This section also sets out the policy direction for hazardous waste management in Alameda County: goals and policies to be followed (Chapter 2).

Section II provides a comprehensive overview of current hazardous waste management in this county. Patterns of waste generation in 1986 are summarized in Chapter 3: types and volumes of wastes; types and locations of generators. This chapter discusses

Table 1-1

HAZARDOUS MATERIALS PROGRAM MATRIX

CALIFORNIA COUNTIES FOUNDATION — IMPLEMENTATION REQUIREMENTS.

HAZARDOUS MATERIALS STORAGE CONTROL

HAZARDOUS MATERIALS LAW	PURPOSE/ OUTPUT	APPROACH/BASIC REQUIREMENTS	IMPLEMENTING AGENCIES (LOCAL/STATE)	COVERAGE	KEY DEADLINES	PERMITTING/ INSPECTION REQUIREMENTS	DATA MGMT. REQUIREMENTS	PUBLIC PARTICIPATION REQUIREMENTS	CRITICAL COORDINATION NEEDS	COMMENTS
STATE REGULATION OF UNDERGROUND STORAGE TANKS • Sher, Cortese Bills	• Regulates underground hazardous substance storage to prevent ground-water contamination	• Monitors existing and new tanks • Construction standards for new tanks after 1/1/84 • Unauthorized discharges reporting	• County • State Water Resources Control Board regulations • Regional Water Quality Control Board	• Hazardous materials and wastes stored underground	• 7/1/85 Deadline to install monitoring systems on existing tanks • 9/1/86 Deadline by which final permit was to be approved or denied.	• Permit required every 5 years • Annual report by permittee • Local agency inspection every 3 years	• State has maintained computerized data from permits	• None	• Report releases to RWQCB within 24 hours • Coordinate with Fire Code/Waters Bill, waste generator inspection • New RCRA program will establish federal requirements	• Exempts cities/counties with equivalent local ordinance as of 1/1/84
HAZARDOUS MATERIALS STORAGE AND EMERGENCY RESPONSE • Waters AB 2185/2187	• Regulates hazardous materials storage and emergency response planning • Public "right-to-know"	• County designates admin agency • Firms prepare business plans • County prepares area emergency response plan • Cities may assume implementation	• County (mandatory) • Cities (optional) • State office of Emergency Services regulations and approval of area plans	• Materials posing health and environmental hazards • Thresholds: Liquid-55 gal. Solid-500 lbs. Compressed Gas-200 cu. ft. (at STP)	• 3/1/87 Business plan, including plans for inspections and data mgmt to admin agency 1/1/88 if local program predated Water Bills • 12/31/87 Area plans, were due to State OES	• Business files annual inventory of max hazardous material (hazmat) amounts handled onsite, haz waste estimates • Periodic inspections	• Overall hazardous materials data management systems • Extensive data in business plans	• None • Public access to information	• Data collection crucial to AB 2948 planning • Coordinate with La Follette, waste general inspection UST regulation, SARA Title III	• Cities can self-designate • 69 cities self-designated statewide
ACUTELY HAZARDOUS MATERIALS RISK MANAGEMENT • La Follette Bill — AB 377/71059	• Regulates storage and handling of acutely hazardous materials	• Firms handling acute hazmats (AHMs) must file registration form • New/modified facilities with AHMs must prepare RMPP • Local admin agency may require RMPP from existing operations even if no modifications have been made • Exemptions available	• Local administering agency (same as Waters Bill) • State Office of Emergency Services	• Acutely hazardous materials defined by EPA (406 chemicals) • Same thresholds as Waters Bill	• 9/1/87 Registration forms available from Office of Emergency Services • 1/1/88 Registration forms due to administration agency • 1/1/88 Risk Management Prevention Program requirement in effect	• Inspections every 3 years	• None overall • Each facility keeps data	• None • Agency must coordinate public access • Risk Management Prevention Program includes off-site pessimistic case consequences assessment	• Waters Bill • Uniform Fire Code, especially Article 80 • SARA Title III • Building/planning departments	• Coordination with SARA Title III is a major issue
EMERGENCY PLANNING AND COMMUNITY "RIGHT-TO-KNOW" • SARA Title III (1986)	• Requires statewide and local emergency planning and public "right-to-know" for handling extreme hazmats	• Governor designates agencies and districts • EPA establishes emergency planning requirements	• State wide commission • Local planning committee	• Extremely hazardous substances defined by EPA (406 chemicals identical to La Follette Bill) • Additional reporting of other hazmats	• 5/1/787 Businesses were to notify state of extreme hazmat storage • 7/1/88 First annual business report of continuous releases • 10/1/88 Local emergency plan due	• No inspections • No permits	• None required • EPA to prepare data base of all continuous releases	• Information available to public • Local emergency planning commission	• La Follette Bill • Waters Bill • Uniform Fire Code, especially Article 80	• Coordination with state (Waters, La Follette Bills) and local (Uniform Fire Code) reporting and emergency response programs are major issues
UNIFORM FIRE CODE	• Contains articles regulating hazardous materials	• Model standards devised by Western Fire Chiefs Association (new requirements 1988 Uniform Fire Code)	• Local fire agencies	• All hazmat defined in Article 9, including toxic gases • Specific exemptions	• Revised Article 80 promulgated 8/87 (adopted locally)	• Inspection by fire prevention service (typically annual)	• None	• None	• La Follette Bill • Waters Bill • SARA Title III	• Discretionary program (local adoption) • Localities can adopt stricter requirements

OTHER TOXICS LAWS AND PROGRAMS

APE DRINKING WATER AND TOXICS ENFORCEMENT ACT Proposition 65 (1986)	- Protects drinking water sources from future toxic contamination - Warns persons potentially exposed to toxics - Requires certain government employees to report discharges	- Develops list of chemicals known or suspected to cause cancer or reproductive damage - Precludes "knowing discharge" to drinking water sources - Shifts burden of proof to discharger regarding safety ("no risk" vs "safe use")	- Health and Welfare Agency (statewide) - County board of supervisors and county health officer	- Chemicals on list prepared by state - All hazardous waste for discharge reports	2/27/88 Exposure warnings on first list (end of grace period) 10/27/88 No discharges of chemicals on first list unless "safe" (end of grace period) 1/1/89 Government list of suspected cancer/reproductive toxicity (annual revisions)	None	State agencies provided initial data to counties (1/1/87)	State Science Advisory Panel	- Link to source reduction priorities for listed chemicals - Link to La Follette Bill/SARA Title III	- Based on 1986 ballot initiative - Water companies exempt (trihalo-methane) - Implementation still uncertain - Extent of litigation - Civil penalties (\$2500/day) - Criminal sanctions
DRINKING WATER MONITORING AB 1803	Monitors public drinking water wells for organic chemicals	Requires water purveyors county health departments to test wells, report findings to state	- DHS—large drinking water systems (200 plus connections) - County health dept—small drinking water systems (5-199 connections)	Tests for numerous chemicals and metals	119 major water systems tested in 1984-1985 - Small systems 1985-1988 - Ongoing	None	Department of Health Services received all data	None	- Coordinated with groundwater protection and cleanup programs - Federal and state Superfund will remove risks to groundwater	18% of wells statewide had detectable contamination - Issue: public notification of detected drinking water contamination
TOXIC AIR CONTAMINANTS Tanner Bill AB 1807 Connelly/Stirling Bill AB 2588	- Controls risks of high priority toxic air contaminants - Sets standards - Develops emissions control regulations - Monitors toxic "hot spots"	- Scientific study of risks from toxic contaminants - Sets initial priorities for study (benzene first) - Moves to enforceable regulations	- ARB sets standards—input from Science Advance Board - Air Quality Management District/Air Pollution Control Districts—emissions control program	7 chemicals identified to date: asbestos, benzene, cadmium, dioxins, ethylene dichloride and hexavalent chromium	Ongoing	None until emissions requirements established	Air Resources Board—air toxics data	None	- Coordinated with federal Clean Air Act - Link to Prop 65 exposure warnings - RCRA/Calderon Bill regarding air emissions	EPA controls other air toxics under Clean Air Act
INDUSTRIAL WASTE PRETREATMENT PROGRAMS Control toxic discharge into sewers	- Protects sewer systems from toxic contamination - Protects receiving waters from toxic contamination	- Sewer systems implement pretreatment program locally - National categorical standards under Clean Water Act (enforced locally)	- Regional Water Quality Control Board - Local sewerage agencies publicly owned treatment works	- Metals - Organics	Ongoing	- Frequent inspections of each facility - Discharge permits required from publicly-owned treatment works	Publicly owned treatment works—data on permit requirements and discharge characteristics	None (some publicly owned treatment works have discharged advisory commission)	Coordinated with all other inspections of same facilities (Waters, MOU, La Follette Bill, etc.)	Underutilized potential for integration into broader toxics management effort
CLEAN AIR ACT Basic air quality regulations	- Protects and enhances air quality - Attains National Ambient Air Quality Standards	- Sets NAAQS - Controls emissions from major stationary sources - Controls auto emissions - Prevents significant deterioration of air quality	- APCDA/QMD for fixed sources; ARB for mobile sources (automobiles for example) - EPA sets national standards/approves SIP	- SO₂, NO_x, smog, lead, ozone - Toxic air emissions	- Ongoing at facility 12/31/87 must meet all National Ambient Air Quality Standards (EPA may extend)	- Permits for all major facilities - Inspections	Air Pollution Control District/Air Quality Management District maintains permit files	- Public hearings - Workshops - Formal public comments	- Coordinate with other inspections of same facilities - RCRA/Calderon Bill regarding air emissions	EPA proposing to extend National Ambient Air Quality Standards compliance deadline far into the future
WATER QUALITY CONTROL ACT Porter-Cologne Act	Protects surface and groundwater quality, to maintain "beneficial uses" of water	- Technical standards for all major discharges - Location standards to protect groundwater - Waste Discharge Requirements	- Regional Water Quality Control Board - State Water Resources Control Board	- Pollutants discharged to navigable waters by ind. or sewage plants - Regional "basin plans" for each hydrogeologic region	Ongoing	- WDRs allow discharge to groundwater - NPDES Permits regulate discharge to surface waters - Self-reporting	Regional Water Quality Control Board maintains permit data	Regional Water Quality Control Board meetings public	- Underground storage tank regulation - Waters Bill - La Follette Bill - Generator inspections - RCRA	Controls over toxic discharges included in basic permits
RESTRICTED MATERIALS Pesticide Contamination Prevention Act and Restricted Materials Act	- Prevents contamination of groundwater - Regulates use of materials	- Pre-use registration of pesticides - Registration of specific applications of pesticides	- State Department of Food and Agriculture sets standards - County agricultural commissioners enforce	- Pesticide contaminants and other organic chemicals - State list of restricted materials	Ongoing	- Annual registration permits (notice required before applying) - Inspection onsite	- DFA, county commissioners receive reports from pesticide applicators - Additional conditions may be put on landowners	None	- EPA standards - Groundwater protection programs	New restricted materials need state approval
INFECTIOUS WASTE Infectious Waste Control	Controls spread of infectious disease	- State regulations governing treatment and disposal - Local enforcement	- County Environmental Health Division - State DHS	Infectious waste	Ongoing	- DHS (permit) - County (inspection)	None	None	Calderon Bill	None

Table 1-1

HAZARDOUS WASTE REGULATION

COUNTY HAZARDOUS WASTE MANAGEMENT PLANS • Tanner Bill — AB 2948	- County haz waste mgmt plans - Accelerated permitting of new haz waste mgmt facilities - Appeals process can override local siting decisions	- County plans approved by CSHWMP - County haz waste management plans adopted into local plans - Subsequent facility siting consistent with county plans - Remember State Appeals Board	- County prepares CSHWMP - State guidelines approval of plans by DHS TSCD - Local advisory committee with specific functions	- All hazardous wastes generated within the county 1987 volumes and types - Projections to 1994, 2000	6/30/87 Department of Health Services guidelines issued 12/31/87 Draft county plans due to DHS 10/1/88 final county plans due to DHS	None	No final requirement, but overall hazardous waste data necessary to prepare and update county plan	- Advisory commission outreach in 1987 - Public hearings 1988 plan approval process	- Memorandum of Understanding (MOU) inspections - Waters/La Follette, RCRA/MOU data - Facility siting needs	- Non-mandatory, but threat of state override of local land use decisions - Has yet clear how county, regional haz waste plans will fit together - Plans are to reflect haz waste hierarchy
FEDERAL REGULATION OF HAZARDOUS WASTES • RCRA, HSWA	- Regulates hazardous waste generators, transporters, treatment, storage and disposal facilities "Cradle-to-grave" regulation	- Permits/TSD facilities - Technical standards - Groundwater monitoring requirements - Generator manifests - HSWA shifts to treatment and requirements for underground tanks	- California not authorized by EPA to assume full RCRA authority TSCD of the DHS carries out selected permit/inspections - No formal direct local gov role but DHS signs MOU for county permits and inspections	- Hazardous wastes defined by EPA - Storage 2 to 90 days	11/8/84 All landfills opened after this date require double-lining, leachate collection, monitoring systems - Deadlines for land disposal phaseout 1985-1992 for different wastes	Department of Health Services inspects treatment, storage and disposal every 1 or 2 years	Department of Health Services transportation "manifest" data	None	- MOU generator inspections - Haz Waste Mgmt planning (AB 2948, Tanner Bill) - State underground storage tank, landfill, toxic pol regulations - Federal and state Superfund	- Need to relate county hazardous waste planning to federal/state regulatory efforts - Corrective action for cleanup when needed - Citizen lawsuits authorized
FEDERAL TOXIC CLEANUP LAW • CERCLA (Superfund, 1980) • SARA (amendments) 1986	- Leachate, seepage and cleanup up potentially hazardous sites - Funded by responsible parties or Superfund - Outlines strict liability to original hw generator and transporter	- Removal and remedial actions - National Priority List - Remedial Investigation and Feasibility Study analysis	- EPA region 9 "State lead" cleanup by Toxic Substances Control Division of the Department of Health Services - No direct local role	Hazardous waste sites high on Hazard Ranking System	- Site specific - Delays are typical - litigation - technical complexity	EPA monitors cleanup progress, with Regional Water Quality Control Board and Department of Health Services	Extensive data available to Department of Health Services/TPA on individual sites, but little data aggregated across sites	1986 SARA request for more public involvement - Local advisory committee established for specific sites - Community relations effort	- Coordinated with groundwater protection and drinking water monitoring - State Superfund program supplements, provides required state funding	- Fed cleanup standards plus state and local standards apply - Strong enforcement powers - Citizen lawsuits authorized - Permanent treatment preferred - No local permits for onsite remedial actions
STATE SUPERFUND • Hazardous Substance Account Act	- Provides a 10% state share at NPL sites - Accelerate private cleanup of sites not on NPL - Provides state funds for cleanup of abandoned sites not on NPL	- Identify and rank sites (state list) - Remedial Investigation and Feasibility Study analysis - Cleanup	DHS/Toxic Substances Control Division (regional offices)	400 sites on state list	Ongoing	Department of Health Services/Toxic Substances Control Division	Department of Health Services data	- County participation (optional) - Remedial action plan	Coordinated with federal Superfund/groundwater protection	- Standards for groundwater cleanup vary among Regional Water Quality Control Boards - New pilot program for local oversight underground storage tank cleanup
TOXIC PITS CLEANUP ACT • Katz Bill — AB 3566/3121	- Limits use of surface impoundments for hazardous waste management - Protects groundwater	- Impoundments within 1/4 mile of drinking water source must close unless an exemption is received - Other impoundments need double liners, leachate collection, groundwater monitoring systems	- Regional Water Quality Control Board review exemption requests - No direct local role	All surface impoundments	- RWQCB to act on all exemption requests by 12/31/87 - Impoundments within 1/4 mile must close by 6/30/88 unless exempt (5 year max.) - Other impoundments must meet technical standards by 6/30/88 (permits required)	Regional Water Quality Control Board	Regional Water Quality Control Board: data on surface impoundments	Regional Water Quality Control Board public hearings	- Coordinated with other groundwater protection actions - Tanner Bill planning (AB 2948) - RCRA	None
STATE REGULATIONS OF HAZARDOUS SOLID WASTE DISPOSAL • Calderon Bill AB 3525/3374 • Eastin Bill AB 2448	- Calderon Bill requires air emissions and leachate testing from all existing/former solid waste sites - Eastin Bill creates new solid waste Superfund	- Priority rankings of sites for water and air quality assessments \$100 million in new solid waste cleanup account	- RWQCB for leachate, AQMD and APCD for air emissions - No direct local role - Facility owner conducts the tests - CWSMB administers Eastin Bill	All solid waste disposal sites	11/88 Eastin Bill applies to solid waste sites active as of this date 11/88 Landfill operators must certify compliance with planning, financial responsibility requirements	- Department of Health Services issues permits, county reviews - Inspections (county or city)	Regional Water Quality Control Board and Air Quality Management District/Leachate Pollution Control District must have data available	None	- Relate to CSHWMP - Requires coordinated RWQCB/APCQ activities - CWSMB grants available for local household hazardous waste programs	New account responds to extensive remedial action needs
STATE HAZARDOUS WASTE REQUIREMENTS • State Hazardous Waste Control Law	Ensures hazardous waste generator compliance with RCRA/HSCL	- DHS administers with some federal requirements - County health departments may sign MOU with DHS to permit and inspect most generators	- DHS administers statewide - County or city health department, under MOU agreement with the DHS	- All haz waste generators, transporters, TSD facilities - MOU covers haz waste generators (defined by EPA/DHS), except permitted TSD facilities	Flexible	Annual inspections	None	None	- Tanner Bill planning (AB 2948) - Other hw programs (UST regulations, RCRA, Waters Bill, La Follette Bill, etc.)	- Local agency does not explicitly holding RCRA TSD permits - Inspections can encourage waste reduction
LAND DISPOSAL PHASEOUT • Robert Bill DB 1503	Accelerates transition from land disposal to hazardous waste treatment	- Prohibits disposal of untreated liquid waste in any hazardous waste landfills - Prohibits land disposal of untreated wastes (except from site cleanup)	- Department of Health Services/Toxic Substances Control Division - No direct local role	All hazardous wastes (as defined by DHS)	6/8/90 Deadline for disposal of untreated wastes—Department of Health Services treatment standards effective (extend to 5/8/92)	None	None	None	- Tanner Bill planning (AB 2948) - Strong hw treatment facilities - Related to federal HSWA/RCRA land disposal bans	- DHS sets overall/adopts treatment standards 2 year extensions if no treatment exists—DHS likely to change deadlines to match federal deadlines (1992)
TECHNICAL AND FINANCIAL ASSISTANCE TO HW REDUCTION • Farr Bill AB 685/1981 • Kilias Bill AB 2489/2490 • Garbman Bill SB 798 • Bronzan Bill AB 2234	Provides funding, information intended to accelerate hazardous waste reduction/recycling and treatment	- Farr, RO & D grants - Kilias: county consulting (AB 2490) - Department of Health Services consultation (AB 2490) - Garbman: loans, loan guarantees	- DHS: Office of Small Business - U of C Internships - Counties - Local small business development corporation	Venue with expanding focus on small hazardous waste generators	Ongoing (annual cycle typical)	None	None	None	- RCRA/HWCL - Toxic pits, solid waste landfill programs - Household hazardous waste programs	- Attempt to assist technology development and adoption and information dissemination - Increasing focus on small and household hazardous waste generation
HOUSEHOLD HAZARDOUS WASTE	- Encourages safe disposal of HHW - Educates public	County Solid Waste Management Plans must include programs	- County in conjunction with the cities - CWSMB guidelines	Household hazardous wastes	Variable next CSHWMP revision to include HHW program	None	None	- State advisory commission - State Department of Education to	- Include in CSHWMP - Tanner Bill planning (AB 2948)	None

wastes sent offsite with DHS manifests; wastes sent for recycling (oils and solvents); wastes generated by small businesses; household hazardous wastes; and wastes from cleanup of remedial action locations and from leaking underground storage tanks.

In Chapter 4, the various waste management practices are described. Here onsite hazardous waste source reduction, storage, recycling, and treatment activities are summarized. Descriptions are presented of the principal land disposal and treatment facilities receiving wastes from Alameda County generators in 1986: in Contra Costa, Solano, Kings, and Santa Barbara Counties.

Chapter 5 presents basic information on the many existing regulatory programs affecting hazardous waste management. The chapter includes hazardous waste programs; hazardous materials programs; and air quality and water quality programs.

In Section III, the focus of the analysis shifts from the present to the future: expected patterns of hazardous waste management in 2000. Chapter 6 reviews basic factors affecting hazardous waste issues in Alameda County in the next ten or more years: public concerns, national and state policy, and economic factors. Tensions between public and private roles, between onsite and offsite waste management, between new firms and existing ones, and among source reduction, treatment, and land disposal are all addressed.

Chapter 7 contains basic projections of hazardous waste generation in 2000. This involves alterations to the 1986 baseline data to account for economic growth, and then to show the impact of alternative levels of anticipated source reduction and recycling. This chapter includes three different projections:

- an economic forecast, without any source reduction
- a market-driven projection, with moderate source reduction
- a projection reflecting aggressive source reduction, and assuming effective implementation of a series of local government efforts at both new facilities and at existing plants.

Each projection defines waste stream quantities by types of wastes, locations of generators, and types of industries generating the wastes.

In Chapter 8, these data are translated into a needs assessment. Waste stream profiles for 2000 are structured to assess Alameda County's probable needs for new transfer stations, treatment facilities of several kinds, hazardous waste incinerators, and residuals repository, with sufficient capacity to ensure flexibility to meet unanticipated problems. It is essential to note, however, that the needs analysis shown in Chapter 8 has been superseded by the facility allocation process currently being conducted by the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee of the Association of Bay Area Governments, as part of the effort to develop an interjurisdictional agreement among the nine Bay Area counties for siting new hazardous waste facilities.

Chapter 9 contains siting criteria for the different types of hazardous waste facilities and maps showing the application of those siting criteria to the County area. It also contains composite maps showing designated general areas in which hazardous waste facilities might be able to be sited.

Section IV of the Plan, Chapter 10 presents the recommended Implementation Program: actions needed, including resource requirements funding, staffing and milestones.

Section V, a summary of the environmental assessment for the plan, is in Chapter 11: a summary of the programmatic EIR done on this plan to meet relevant CEQA requirements.

Section VI includes a range of technical and descriptive appendices to the plan.

Chapter 2

POLICY DIRECTIONS FOR HAZARDOUS WASTE MANAGEMENT IN ALAMEDA COUNTY

A. INTRODUCTION

This chapter explains the policy framework in which this plan was developed and which is intended to guide its implementation in Alameda County through the turn of the century. It also describes how the plan relates to the hazardous waste management policies of other levels of government, as well as to existing county policies.

B. FEDERAL AND STATE POLICIES AND REQUIREMENTS

Recent state and federal legislation has established clear policies concerning management of hazardous wastes. These policies express a preference for reducing waste generation, and mandate a near-total phaseout of land disposal of all untreated hazardous wastes between 1985 and 1992. These wastes are to be treated, greatly reducing the remaining risks to public health and the environment.

In a significant break from traditional hazardous waste management approaches, Congress in 1984 established a new policy direction. This policy states that land disposal should only be used as a last resort for residues from waste treatment, and eliminated as quickly and completely as possible for all untreated wastes. The 1984 federal Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (P. L. 98-616; 40 CFR Part 240 et. seq.) requires a nationwide phaseout of disposal of all untreated liquid hazardous wastes on the land by 1992--including disposal in landfills, pits, ponds, lagoons, surface impoundments, injection wells, or similar facilities.

Congressional intention on this issue is specific. In the opening statement of its findings and objectives in this legislation, the House-Senate conferees expressed the judgment by Congress that the risks from land disposal were too great and made clear their preference for alternative management approaches for dealing with hazardous wastes:

The Conferees intent to convey a clear and unambiguous message to the regulated community and the Environmental Protection Agency: reliance on land disposal of hazardous waste has resulted in an unacceptable risk to human health and the environment. Consequently, the Conferees intent that through the vigorous implementation of this Act, land disposal will be eliminated for many wastes and minimized for all others, and that advanced treatment, recycling, incineration, and other hazardous waste control technologies should replace land disposal. In other words, land disposal should be used only as a last

resort and only under conditions which are fully protective of human health and the environment¹.

HSWA established a statutory presumption against land disposal of all untreated hazardous wastes unless the U.S. Environmental Protection Agency (EPA) specifically found that such a ban for a particular waste was not required to protect human health and the environment. The amendments established a set of specific deadlines for banning groups of hazardous wastes from land disposal. EPA can extend these deadlines for up to 2 years only if there is a lack of alternate treatment capacity to handle those wastes, thus providing the link to successful planning and siting.

HSWA brought small quantity generators (those producing less than 13.2 tons annually) into the federal "cradle to grave" hazardous waste management system for the first time; required generators to certify their efforts at reducing their waste production; greatly strengthened operating, groundwater monitoring, financial capability, and closure standards for hazardous waste management facilities; and established a national program to address leaking underground storage tanks.

In many respects, California has led the nation in acting to protect public health and the environment by restricting the land disposal of hazardous wastes. This program, begun in 1981, served as the national model for the 1984 federal HSWA. For example, HSWA incorporates the so-called "California List" of hazardous wastes to be banned from land disposal, so named because pre-existing California law provided for similar restrictions. Through a large number of statutes, the state has restricted the ability of generators to continue to rely on land disposal.

The Toxic Pits Cleanup Act (Katz, 1984) required Regional Water Quality Control Board (RWQCB) inspections of surface impoundments and other pits, ponds, and lagoons used for hazardous waste disposal, and significantly limits their continued operation. In 1986, California accelerated this program through the hazardous Waste Management Act (SB1500, Roberti), which requires the state to promote reduction in hazardous waste generation, increase recycling and treatment of hazardous wastes, and allow land disposal of treatment residuals only. The California phaseout relative to land disposal is more restrictive than that under RCRA and HSWA. The Legislature declared:

The disposal of untreated hazardous waste in, or onto the land without adequate technical safeguards threatens not only the quality of the state's land, air, and water resources, but poses a direct hazard to health and safety by exposing the public to substances that have been found to cause cancer, birth defects, miscarriages, nervous disorders, blood diseases, and damage to vital organs and genes.... It is, therefore, in the public interest to establish a program to limit the

¹ Legislative History. Hazardous and Solid Waste Amendments of 1984, Public Law 98-616, 98 Stat. 3211. p.5651.

use of land disposal practices which do not meet certain prescribed standards and promote alternatives for hazardous waste management².

No untreated wastes may be placed on or in the land in California after May 1990, as a result of SB 1500, which accelerates the federal mandate. This act, signed on the same day as the AB 2948 planning and siting statute, extends state policies to reduce the volumes of hazardous wastes being disposed on land. The act directs the State Water Resources Control Board (SWRCB) and State Department of Health Services (DHS) to promote hazardous waste management practices following the hazardous waste management hierarchy: reduction in hazardous waste generation, recycling, treatment, and land disposal only of residuals from recycling and treatment.

Another significant policy directive, the federal Superfund Amendments and Reauthorization Act (SARA) of 1986, requires each state to provide EPA by October 1989 with assurance that adequate hazardous waste treatment or disposal facilities will be available for handling the state's waste stream. This can be accomplished either within or outside the state in accordance with an interstate or regional agreement, to provide adequate capacity for the destruction, treatment, or secure disposition of all hazardous wastes that are reasonably expected to be generated during the next 20 years. If this assurance cannot be provided, EPA could withhold Superfund monies from the state to provide for cleanup of known and yet to be identified hazardous waste sites.

Inherent in satisfying these state and federal laws, and the approximately 150 other pieces of related legislation that have been passed over the last 3 years, is the need to establish a comprehensive planning process to address hazardous waste management in a rational way. This need has been recognized in AB 2948 (Tanner, 1986), which established an opportunity for each county in California to develop and implement a County Hazardous Waste Management Plan. In adopting the Tanner Bill, the Legislature saw the need for reducing hazardous waste generation as well as siting environmentally appropriate alternatives to land disposal of untreated wastes:

Safe and responsible management of hazardous wastes is one of the most important environmental problems facing the state at the present time. This management is critical to the protection of the public health and the environment and also to the economic growth of the state. If environmentally sound hazardous waste facilities are not available to effectively manage the hazardous wastes produced by the many industries of the state, the state's economic activity will be hampered and cannot prosper, public health and the environment will be threatened by the increased illegal disposal, and the use of outmoded disposal practices will continue....³

²Hazardous Waste Management Act of 1986 (SB 1500, Roberti), as passed, p.1.

³Sec. 1(a)(2), Health and Safety Code

A solution to the safe and responsible management of hazardous wastes also requires improved programs of waste source reduction and recycling, and encouraging onsite treatment of hazardous wastes, as preferable to the siting of new land disposal facilities. The goal of this act, which recognizes the long-term health, environmental, and economic risks of hazardous waste land disposal, is to prevent hazardous waste from being permanently disposed into land, or emitted into the air, without being processed by an economically and technically feasible alternative technology. Attaining this goal will require the development of feasible programs which should result in the reduction of the volume and hazard of hazardous wastes at their source, and the development of expanded recycling programs for hazardous waste. This goal also requires that, as an alternative to traditional land disposal methods, residuals repositories be utilized for the by-products of preferred hazardous waste treatment technologies. Because of the threat to public health and safety posed by the traditional land disposal of hazardous wastes, it is necessary that these methods of dealing with hazardous wastes come quickly into place⁴.

The Legislature, therefore, declares that it is in the public interest to establish an effective process for hazardous waste management planning at the local level. This process is consistent with the responsibility of local governments to assure that adequate treatment and disposal capacity is available to manage the hazardous wastes generated within their jurisdictions⁵.

C. EXISTING COUNTY GOALS AND POLICIES

Policies in the Alameda County Solid Waste Management Plan provide important starting points for the comprehensive approaches to hazardous waste management planning.

COUNTY SOLID WASTE MANAGEMENT PLANNING

Before AB 2948 was passed, county hazardous waste management planning was authorized under state statutes mandating every county to prepare a County Solid Waste Management Plan with triennial updates. The portion of the Solid Waste Management Plan dealing with hazardous waste disposal was required to be reviewed by DHS for conformity with state hazardous waste standards. DHS recommended that the discussion of hazardous wastes be prepared as a separate element of the County Solid Waste Management Plans.

The 1987 Alameda County Solid Waste Management Plan contains a separate Hazardous Waste Element, prepared after the passage of AB 2948 but before the develop-

⁴Section 1(a)(4), Health and Safety Code

⁵Section 25135(b), Health and Safety Code

ment of the DHS Guidelines for the preparation of County Hazardous Waste Management Plans. This element represents "an interim approach to management of hazardous waste in Alameda County that will be followed by a detailed County Hazardous Waste Management Plan." This Hazardous Waste Management Plan will supersede the information and programs contained in the Alameda County Solid Waste Management Plan.

D. OVERALL GOALS AND POLICIES FOR HAZARDOUS WASTE MANAGEMENT

Goals, policies, objectives, and activities all have specific meaning in this plan:

- Goals, as broad statements of fundamental values, serve to orient policy discussion and guide decisionmaking. They reflect consensus on basic social, political, and economic aims.
- Policies characterize the directions taken regarding major issues: steps designed to achieve the goals. They reflect decisions made after consideration of specific alternative positions and are the basis for directing development and implementation of the Alameda County Hazardous Waste Management Plan.
- Objectives--specific statements of desired achievements over time--are measurable. Progress toward reaching them can be assessed at specific points during implementation of the Alameda County Plan. They are the key milestones between 1988 and 2000 in carrying out the policies to reach the goals.
- Activities are those steps needed to achieve the objectives in a timely fashion. They describe the responsibilities, timing, and resources to achieve objectives.

Basic goals and policies for hazardous waste management in Alameda County are discussed in this chapter; specific objectives and the activities that comprise the implementation effort, including the various new and revised programs to be developed for action in Alameda County, are discussed in Section IV (implementation).

These goals and policies are based on extensive discussion by the Waste Management Authority's Hazardous Waste Committee elected officials, Hazardous Waste Management Advisory Committee, city managers, industry, and the general public regarding those major issues affecting Alameda County's Hazardous Waste Management Plan.

The primary goals of Alameda County's Hazardous Waste Management Plan are to protect the public health, welfare and safety, and the environment, and to preserve and

enhance the economic vitality of the county by providing an overall framework for responsibly managing hazardous wastes over the next decade or longer. Another goal is to assist industry and government in meeting state and federal requirements to eliminate land disposal of untreated hazardous wastes by 1990 with a minimum of economic disruption or improper (or illegal) waste storage, management, or disposal. All areas of California share responsibility for meeting these goals on an equitable basis.

In accord with the provisions of state law (AB 2948; Tanner, 1986), new hazardous waste management facilities and significant expansions of existing facilities must all be consistent with the goals, objectives, policies, and siting criteria contained in each county's Hazardous Waste Management Plan and must meet the demonstrated hazardous waste management needs of each county.

The Waste Management Authority's Hazardous Waste Committee will continue to make policy recommendations to the Authority.

E. ALAMEDA COUNTY HAZARDOUS WASTE MANAGEMENT POLICIES

POLICY 1: LAND DISPOSAL

ALAMEDA COUNTY SHOULD AGGRESSIVELY PURSUE THE PHASEOUT OF LAND DISPOSAL OF HAZARDOUS WASTE GENERATED BY INDUSTRY IN THE COUNTY

Policy 1A. Alameda County, its cities, special districts, and the Waste Management Authority will promote the responsible management of hazardous materials and wastes by providing a sound basis for planning and siting those new facilities that offer alternatives to continued reliance on disposal of hazardous wastes in the air, water, or land.

Policy 1B. Alameda County, its cities, special districts, and the Waste Management Authority will continue to encourage economic development in Alameda County. Under this plan, these agencies will require the responsible management of hazardous wastes and the cooperation and compliance of all firms, existing and new, with restrictions on land disposal of hazardous wastes.

POLICY 2: HAZARDOUS WASTE MANAGEMENT HIERARCHY

ALAMEDA COUNTY SHOULD OVER TIME LIMIT THE OVERALL GENERATION OF HAZARDOUS WASTES

Policy 2A. Alameda County, its cities, special districts, and the Waste Management Authority will assist local, regional, and state authorities in establishing, maintaining, and monitoring standards necessary to protect public health, safety and welfare, and the

environment in managing hazardous materials and wastes. It is essential that government at all levels ensure that any activities involving hazardous materials and wastes comply with appropriate regulatory standards.

Policy 2B. In this plan, Alameda County, its cities, special districts, and the Waste Management Authority shall all require all hazardous waste generators, including large generators, small quantity generators, local governments and special districts, as well as households--to adopt and implement the hierarchy of hazardous waste management strategies to the maximum extent feasible both economically and practically. Whenever possible, hazardous waste management decisions should give preference to those practices that are higher on the hierarchy:

1. Source reduction including toxics use reduction
2. Reuse and recycling onsite
3. Reuse and recycling offsite
4. Treatment onsite
5. Treatment offsite
6. Incineration except as otherwise prohibited
7. Secure disposal of residuals from recycling, treatment, and incineration

This fundamental hierarchy emphasizes the importance of preventing (rather than managing or controlling) pollution--whether of air, water, or land--by giving highest priority to reducing hazardous waste generation at the source. This can be accomplished in a variety of ways, including substituting the use of less-hazardous materials in manufacturing and consumption, process modifications, and housekeeping measures.

Once source reduction has been pursued to the extent practical, second priority should be given to recycling and reuse of wastes. All remaining wastes would then be treated either onsite or offsite. If appropriate, recycling and treatment residuals would then be incinerated, along with incinerable wastes. Where hazardous waste is amenable to forms of treatment other than incineration, these other forms of treatment should be given preference over incineration. The ash from incineration, plus other inorganic treatment residuals, would then be placed in special land disposal units made secure from liquids that might create leachate and contaminate groundwater.

Policy 2C. Alameda County, its cities, special districts, and the Waste Management Authority will require through regulation that firms adopt and follow this hazardous waste management hierarchy to the maximum extent feasible both economically and practically. Alameda County shall devise and implement a special comprehensive new program to eliminate barriers and encourage and assist source reduction and waste minimization actions by private firms and government agencies.

POLICY 3: HAZARDOUS MATERIALS USE REDUCTION

HAZARDOUS MATERIALS USE REDUCTION SHOULD REPRESENT A TOP PRIORITY IN ALAMEDA COUNTY'S PLAN AND PURSUIT OF THE HIERARCHY

Policy 3A. Hazardous materials use reduction is a top priority of the Plan. The county, its cities, the special districts, and the Waste Management Authority will promote an aggressive hazardous materials use reduction effort for all existing industry, and will encourage existing industry to conduct hazardous materials use reduction audits and develop plans for toxic use reduction. These agencies of government should work cooperatively with industries, assisting and supporting them in efforts to use fewer toxic materials in manufacturing processes whenever feasible. Reduction in materials use is the most effective method of reducing waste from the standpoint of cost to industry (manufacturing and disposal) and cost to government (less regulation and reduced need for treatment and disposal facilities).

Policy 3B. Firms wishing to locate in Alameda County (or to expand existing facilities significantly) shall demonstrate commitment to the policy of hazardous materials use reduction as a condition for receiving land use approvals and business permits. Industries may be required to supplement initial designs with mandatory plans to further reduce the amount and toxicity of hazardous materials required for manufacturing processes. Progress toward accomplishing this objective should be assessed as part of the permit renewal process.

POLICY 4: SOURCE REDUCTION AND WASTE MINIMIZATION

SOURCE REDUCTION AND WASTE MINIMIZATION ARE A TOP PRIORITY IN ALAMEDA COUNTY'S HAZARDOUS WASTE MANAGEMENT PLAN

Policy 4A. Source reduction and waste minimization are a top priority of the plan. The county, its cities, the special districts, and the Waste Management Authority will promote an aggressive effort for all existing industry. Special new efforts will be devised and implemented to ensure maximum pursuit of source reduction and waste minimization at these existing facilities.

Government agencies should encourage innovative private-sector waste reduction activities and should act to remove barriers to wider source reduction and recycling through creation and implementation of a waste reduction program designed in concert with both large and small generators in Alameda County. The Waste Management Authority will develop a model source reduction program as its highest-priority task in implementing this plan. Where barriers exist that are beyond the direct control of local governments and districts to resolve, local agencies will advise appropriate state or federal authorities with recommendations for removing the barriers to accelerate source reduction.

Policy 4B. Implementing an aggressive waste reduction program will require local governments to work closely and cooperatively with industry and draw upon its expertise. The policy of Alameda County, its cities, special districts, and the Waste Management Authority is to work collaboratively in a spirit of public-private partnership with local firms, existing and new, in pursuing waste reduction and implementing the hazardous waste management hierarchy. Waste reduction can be rapidly implemented by each firm to the maximum extent economically feasible.

POLICY 5: ONSITE TREATMENT

THE PLAN SHOULD ENCOURAGE ONSITE TREATMENT IN PREFERENCE TO OFFSITE TREATMENT OF HAZARDOUS WASTES FROM ALAMEDA COUNTY GENERATORS

Policy 5. Alameda County, its cities, the special districts, and the Waste Management Authority encourage firms whenever practical to employ onsite management in preference to offsite management of hazardous wastes. Firms should incorporate onsite management as part of overall manufacturing processes in order to reduce transportation risks to the community. Special attention should be given to the needs of small business generators for whom some types of hazardous waste management may not be practical onsite. While regulatory measures to give priority to onsite hazardous waste management may be needed, rigorous enforcement of standards necessary to protect the public health, safety, and welfare or the environment should be undertaken.

POLICY 6: CENTRALIZED VS. DISPERSED FACILITIES

OFFSITE HAZARDOUS WASTE MANAGEMENT RECYCLING AND TREATMENT ACTIVITIES SHOULD BE CENTRALIZED IN A RELATIVELY SMALL NUMBER OF LARGE FACILITIES

Policy 6. Alameda County, its cities, the special districts, and the Waste Management Authority strongly encourage locating offsite hazardous waste management facilities as closely as possible to the sources of hazardous waste generation, taking into consideration the siting of such facilities within the jurisdiction where the predominant amount of waste to be processed by the facility is generated. Within the practical limits reasonably imposed by economies of scale, market service areas, and environmental suitability (including consistency with the siting criteria contained in this plan), hazardous waste management facilities should be dispersed as close as possible to clusters of hazardous waste generation sources. This is consistent with implementation of the hazardous waste management hierarchy, and with Alameda County's intention to distribute facility siting decisions fairly at the County's jurisdictions according to their basic shares of local hazardous waste generation.

POLICY 7: TRANSFER STATIONS

DEVELOPMENT OF NEW HAZARDOUS WASTE TRANSFER STATIONS AT APPROPRIATE (DISPERSED) LOCATIONS IN ALAMEDA COUNTY SHOULD BE ENCOURAGED

Policy 7. Alameda County, its cities, the special districts, and the Waste Management Authority recognize the important role played by hazardous waste transfer stations dispersed among clusters of generators, taking into consideration the siting of such facilities within the jurisdiction where the predominant amount of waste to be processed by the facility is generated. Easily-accessible transfer facilities will be encouraged as a key to the county's ability to address the hazardous waste management needs of its smaller generators and households. This is an essential element in implementation of Alameda County's small quantity generator and household hazardous waste programs.

POLICY 8: SMALL GENERATORS

ATTENTION SHOULD BE DIRECTED TO SMALL BUSINESSES THAT GENERATE SMALL QUANTITIES OF HAZARDOUS WASTES

Policy 8A. The highest priority for immediate attention in this hazardous waste management plan is to meet the needs of the larger industrial firms that generate the greatest volumes of hazardous waste. These generators will be expected to comply first with the provisions of Policies 2B and 2C regarding the hazardous waste hierarchy. Small firms and small generators of hazardous wastes have special needs and pose enormous potential risks from possible illegal disposal of these waste. Special attention from local governments should be directed to small generators. Alameda County, its cities, the Waste Management Authority, and the special districts address the special hazardous waste management programs of small business/small quantity generators by first identifying such a generator and then by identifying and reducing barriers to improved practices, especially waste reduction. The Plan encourages waste management firms to provide regulatory and technical information, affordable waste audits, and pickup and recycling services specifically tailored to small businesses. Special programs to provide financial assistance (e.g., loans or loan guarantees) to allow smaller firms to pursue the hazardous waste hierarchy are also needed on a high-priority basis.

Policy 8B. Programs to assist small business hazardous waste generators in Alameda County should be designed to be self-sustaining by providing their own revenue source(s) (e.g., through fees or the like). However, such a funding basis should be designed not to impose such a burden on the program's target groups that it discourages their participation and responsible hazardous waste management. The availability of state grants, loans, and loan guarantees and of creative private-sector financing mechanisms all deserve careful exploration.

POLICY 9: HOUSEHOLD HAZARDOUS WASTES

A PROGRAM FOR HOUSEHOLD HAZARDOUS WASTES SHOULD BE DEVELOPED

Policy 9. An effective ongoing program should be developed to help educate households in Alameda County regarding household hazardous materials and wastes and the potential effects when these wastes are discarded into landfills. The program must provide for effectively collecting household hazardous wastes. Funding for household hazardous waste programs should be sought from the state. Alternatively, a modest surcharge could be added to existing fees for garbage collection and disposal under the provisions of AB 1809 (Tanner, 1986). Provisions should eventually be made to treat household hazardous wastes once they are collected rather than disposing of them in hazardous waste landfills.

POLICY 10: PUBLIC PARTICIPATION

PUBLIC PARTICIPATION IN HAZARDOUS WASTE MANAGEMENT PLANNING AND SPECIFIC FACILITY SITING IN ALAMEDA COUNTY SHOULD BE ENCOURAGED

Policy 10. Active public involvement, on the part of both citizens and industry, in developing and implementing the Alameda County Hazardous Waste Management Plan is essential. It forms the basis for a responsible program to protect public health, safety and welfare, and the environment in order to move away from reliance on land disposal. The economic vitality of Alameda County can best be maintained through the cooperative involvement of local industry in developing and implementing the plan. All sectors of the public, including large and small industry and civic and environmental organizations, are encouraged to participate in plan development and implementation. Alameda County, its cities, special districts, and the Waste Management Authority must all encourage active public involvement in the hazardous waste planning process.

POLICY 11: PUBLIC EDUCATION

AN ONGOING PUBLIC EDUCATION PROGRAM ON HAZARDOUS MATERIALS AND HAZARDOUS WASTES SHOULD BE INSTITUTED IN ALAMEDA COUNTY

Policy 11. Alameda County, its cities, special districts, and the Waste Management Authority will promote widespread ongoing education of citizens on hazardous materials and waste management issues. Citizens have a right to know how these materials and wastes are managed and ways in which people can contribute to improving that management and the protection of their health, safety, and economic well-being.

Local agencies will also make special efforts to include industry--especially smaller businesses--as a target of educational and outreach efforts, and a vehicle for citizens' education. Adequate funding will be sought to sustain a long-term public education effort. The public participation effort undertaken as part of the development and implementation process represents a major component of this education. The purpose of a strong public participation/education program is to educate the public over the long-term to improve the level of general understanding about hazardous waste management issues; to inform the public about the planning and siting process; to involve the public in the process; and to incorporate the public's concerns and issues into the Plan process.

POLICY 12: REGIONAL AND STATEWIDE RESPONSIBILITIES

THE PLAN SHOULD IDENTIFY AND ADDRESS ALAMEDA COUNTY'S RESPONSIBILITIES TO OTHER COUNTIES IN CALIFORNIA TO HELP MEET OVERALL REGIONAL AND STATEWIDE HAZARDOUS WASTE MANAGEMENT NEEDS

Policy 12A. Alameda County, its cities, special districts, and the Waste Management Authority recognize their responsibility to join in with other governments in the region and the state in planning for the effective management of all the hazardous wastes generated in the region and the state in accord with the hazardous waste management hierarchy set forth in Policy 2B. Legal constraints such as the Interstate Commerce Clause in the U.S. Constitution limit local governments' ability to restrict use of privately-owned hazardous waste management facilities to those generators located within their own jurisdictions. Therefore, sound hazardous waste management planning, waste reduction efforts, and appropriate facility siting are the mutual responsibility of all governments. Alameda County, its cities, the special districts, and the Waste Management Authority encourage multi-county and regional efforts to plan and implement alternatives to land disposal of hazardous wastes and to limit the risks posed by large-scale transportation of hazardous wastes around the state. Local agencies will participate in and support efforts designed to allocate and develop facilities among all jurisdictions according to interjurisdictional agreements, each facility's environmental suitability, and each facility's economic viability.

Policy 12B. Alameda County, its cities, the special districts, and the Waste Management Authority encourage developing new hazardous waste management facilities adequate by type and capacity to meet all of the expected or potential needs of hazardous waste generators located within Alameda County, including sufficient redundancy to ensure flexibility in responding to unanticipated future events.

Policy 12C. Alameda County, its cities, special districts, and the Waste Management Authority agree to consider as part of an intercounty compromise set forth in a formal intercounty agreement to host an environmentally appropriate, economically viable hazardous waste management facility (or facilities) within its own borders and designed to serve the needs of hazardous waste generators in other counties as well as genera-

tors within Alameda County. Facilities that are built in accord with intercounty agreements will receive local land use approval in accord with existing legislation.

Policy 12D. Local jurisdiction will assure that private firms located in Alameda County and using out-of-county hazardous waste management facilities follow all appropriate federal and state procedures; that they pursue aggressive source reduction; that such facilities receive all necessary mitigation measures to protect the environment and public health in their vicinity; and that host counties are adequately compensated as provided under state law. Alameda County and the Waste Management Authority similarly seek reciprocal agreements with other counties to provide mitigation and compensation for hosting a facility intended to serve generators from outside Alameda County.

Policy 12E. Alameda County, its cities, special districts, and the Waste Management Authority will consider the feasibility and desirability of developing innovative new fee and rebate mechanisms designed to provide specific fiscal incentives for local hazardous waste generators to follow the hazardous waste management hierarchy and to make maximum use of those hazardous waste management facilities located within Alameda County (or to use those out-of-county facilities covered in a formal intercounty agreement).

POLICY 13: ALAMEDA COUNTY WASTE MANAGEMENT AUTHORITY MAY CONSIDER DEVELOPING CERTAIN PUBLIC HAZARDOUS WASTE MANAGEMENT FACILITIES

Policy 13. If necessary, the Alameda County Waste Management Authority will explore the possibility of developing facilities needed to serve generators in the county that may not otherwise be developed appropriately by private developers. Priority consideration will be given to developing a residuals repository if needed to provide a positive economic inducement to private development of new treatment facilities. Joint public-private combinations might be explored as well.

POLICY 14: HAZARDOUS WASTE MANAGEMENT PLANNING AND SITING PRINCIPLE

The County and its cities will act to provide for the safe, effective management of hazardous waste generated within the county. New offsite hazardous waste management facilities shall be primarily limited to a scale necessary to meet the hazardous waste management needs of this county: larger facilities may be permitted in accordance with agreements reached between this county and other jurisdictions or upon determination of the local governing body that the project meets local planning criteria and serves public needs. The "fair share principle," as defined below, will guide the County's efforts to provide for the management of hazardous wastes generated within the county.

The County and its cities recognize their collective responsibility to cooperate with other governments in the region and the state in planning for the effective management of hazardous wastes generated in the region and the state in accordance with the hazardous waste management hierarchy. Sound hazardous waste management planning, waste reduction efforts, and appropriate facility siting are the mutual responsibility of all governments. To this end, the County and its cities encourage multicounty and regional efforts to plan and implement alternatives to land disposal of untreated wastes and to limit the risks posed by transportation of hazardous wastes around the state. Agreements for new facilities to provide the offsite capacity needed for hazardous waste treatment and residuals disposal should be reached among jurisdictions according to their fair share of the hazardous waste stream, each jurisdiction's environmental suitability for different types of facilities, their economic interests, and economic viability of different types and sizes of facilities. Any privately-owned facility located in this county shall be available to serve generators from inside and outside the County.

"Fair share" denotes that each county is responsible for the disposition of its own waste; that is, responsible for its share of waste management. A county cannot be required to accept a facility with a capacity that significantly exceeds the county's own needs, except as provided by an interjurisdictional agreement. It is recognized that the waste streams in each county will probably not support an economically efficient hazardous waste facility of each type needed to handle a county's waste. Therefore, counties are encouraged to enter into interjurisdictional agreements to balance economic efficiency in the size of facilities and to responsibly handle their fair share of the wastes generated. If the county has approved the siting of a facility or facilities that have a capacity equal to or in excess of the county's total hazardous waste management needs, the county will have achieved its fair share of hazardous waste management facilities siting and cannot be forced to accept the siting of additional facilities except as provided by interjurisdictional agreement. The county recognizes that if it does not fulfill its obligations under Implementation Objectives 1-3 below, county policy with regard to the siting of facilities, will be to permit siting of environmentally appropriate facilities, otherwise consistent with the Plan, without regard to the fair share principle.

The Fair Share language does not become operative until interjurisdictional agreements are in place.

SITING CRITERIA

Any proposed specified hazardous waste management facility shall be consistent with the goals and policies of this Plan. In particular, any proposed facility shall be consistent with the fair share principle and with any interjurisdictional agreements on hazardous waste management. Local needs are to be the primary basis for this decision, along with regional commitments. Specifically, facilities are to be designed and sized primarily to meet the hazardous waste management needs of this county, or to meet the county's broader commitments under an interjurisdictional agreement or upon

determination of the local governing body that the project meets local planning criteria and serves public needs.

IMPLEMENTATION OBJECTIVES

(1) **Siting Consistency:** The county, and each city, shall require that all local land use decisions on siting specified hazardous waste management facilities are consistent with the goals and policies and the siting criteria contained in the Plan. Specifically, the county will approve the siting of an environmentally appropriate facility that is consistent with the policies of this plan and disapprove the siting of a facility that is inconsistent with plan policies or is environmentally inappropriate.

(2) **County Actions:** The county will actively seek to meet its unmet hazardous waste management capacity needs through any combination of the following: waste reduction, facility siting, and interjurisdictional agreements. Proposals for hazardous waste management facilities will receive the full attention of the county planning staff and governing body. The county will continue to actively seek to meet its hazardous waste management capacity needs until such time as the county has met those needs through any combination of waste reduction, facility siting, or interjurisdictional agreements.

(3) **Focus of Interjurisdictional Agreement Negotiations:** The county shall enter into negotiations with other jurisdictions for the purpose of negotiating one or more interjurisdictional agreements for the siting of hazardous waste management facilities adequate and necessary to meet the needs of the signatory jurisdictions. Such agreements shall follow the principle of fair share and may take into account both the volumes and degree of hazard for the wastes generated that require offsite management within each participating jurisdiction and the degree of waste reduction effort made by each participating jurisdiction.

If the siting of a particular type of hazardous waste management facility needed in this county is not environmentally appropriate or economically viable, the county shall reach an agreement with one or more other jurisdictions to facilitate the siting of a larger, environmentally appropriate and economically viable facility (or facilities) to be located elsewhere. This county and its cities, in turn, agree to actively consider and, if appropriate, to commit as part of an interjurisdictional agreement to approve the siting of an environmentally appropriate facility (or facilities) within its own borders designed and sized to serve the hazardous waste management needs of other jurisdictions as well as of this county.

SECTION II
CURRENT HAZARDOUS WASTE MANAGEMENT:
ISSUES AND ANALYSIS

CHAPTER 3
CURRENT HAZARDOUS WASTE GENERATION
PATTERNS IN ALAMEDA COUNTY

A. INTRODUCTION

The purpose of this chapter is to describe current patterns of hazardous waste generation in Alameda County. In order to develop a set of policies for effective future management of hazardous wastes in Alameda County, an understanding of the composition of hazardous waste and the patterns of hazardous waste generation is essential. This chapter provides an assessment of available data, an analysis of Alameda County's current waste stream, and a profile of the county's hazardous waste generators.¹

B. DATA SOURCES AND LIMITATIONS

This analysis of Alameda County's patterns of hazardous waste generation is based on currently available data. The extent to which these data accurately and precisely describe the waste stream limits the accuracy of this analysis. Unfortunately, detailed reliable data are not readily available. While this analysis has extended beyond the information provided by the Department of Health Services (DHS), many gaps and uncertainties still remain. It will be essential to update and build upon these data in the future to produce a more accurate description of current hazardous waste generation in the county.

The analysis contained in this Plan does provide a qualitative description of the overall hazardous waste stream, and presents many quantifiable estimates for consideration by decisionmakers. The analysis provides a model for further investigations, and identifies possible areas of emphasis in Alameda County's future hazardous waste management planning effort. Principal data gaps and technical restrictions that limit this analysis are identified and discussed in the following paragraphs.

This plan uses 1986 manifest summaries from the DHS Hazardous Waste Information System. These manifest data cover those hazardous wastes which generators shipped offsite, accompanied by a DHS manifest form. These summaries are the most complete and reliable data source currently available for purposes of this study. However, this information clearly does not describe Alameda County's total hazardous waste stream.

¹The data are based on incomplete material obtained from the State manifest system and local generators. The Plan implementation program calls for early review and update of the Plan where these deficiencies will be corrected. Comments from State DHS on the data portion of the Plan were received too late to include in the final Plan.

By definition the manifests only contain information concerning wastes shipped offsite. No information is included for those hazardous wastes managed onsite. The manifests contain information about only a portion of the wastes shipped offsite. If a generator fills out a manifest partially, or illegibly, these partial data are entered into a suspense file. DHS estimate that approximately 20 percent of the manifests are in the suspense file. It is not known what waste types or volumes this represents. Beyond the suspense file data, the "unknown" manifest summaries were not received. The DHS summaries contain errors. For example data from other counties were included. The tables in the Plan have been corrected.

Although data theoretically describe all county wastes shipped offsite, in reality many Alameda County generators do not fill out DHS manifests. Many small generators may be unaware that they produce hazardous wastes, or that they are required to submit information to the state and others are unwilling to incur the high costs of full compliance.

DHS has developed a series of formulas (based on an EPA survey of small quantity generators) to estimate the number of unidentified small quantity generators (SQGs) and the hazardous wastes they produce. This "No Survey Method" is described in the DHS Guidelines for Preparation of Hazardous Waste Management Plans: Technical Reference Manual (TRM). This method provides calculations to estimate the waste streams produced by 22 industry groups. The TRM lists several Standard Industrial Classification (SIC) codes of businesses in each industry group.

Calculations were made for each industry group using only businesses whose SIC codes were included in the TRM. There may be businesses which were not included in calculations, yet are potential generators; therefore the list of generators may not be complete. Numbers of businesses in Alameda County came from the Bureau of Census, 1985 County Business Patterns. This is currently the most reliable source for information regarding county business profiles; however, it too may contain errors such as listings of local business offices for out-of-county generators. The conversion factors in the TRM for the amounts of waste generated by an industry group are single numbers applied to all businesses within that industry group, regardless of their size. This could lead to inaccuracies because large businesses typically generate more wastes than do small ones. An effort was made to calibrate the conversion factors to business size using DHS manifest data, but without success.

Estimations of waste oil generation outside the manifest system were made separately, using conversion factors provided by DHS for industry groups and County Business Patterns data and checked. These estimates seem reasonable according to conversations with several California waste oil recyclers. However, it has been difficult to justify the estimates in terms of known local waste oil sources.

One limitation affects all estimates included in this report: quantifying hazardous waste streams is a relatively recent undertaking. Thus, benefits of long term experience and practice that can add refinement to a process are lacking. This is evident in the

problems identified with the No Survey Method. Only a few studies are available to help estimate household hazardous waste streams, and each of these has its own limitations which are discussed later in this chapter. Inspection programs in Alameda County are not completely developed. Much of the data available from the Department of Environmental Health (DEH) about the 1,500 businesses it has inspected to date were not complete enough for this analysis, or is in the process of being coded. Some city fire departments have extensive data on hazardous materials storage, but not on hazardous waste generation. No commonly accepted system exists to estimate hazardous wastes from leaking underground tanks. For these reasons, the data presented in this analysis should be viewed as preliminary and subject to change as data collection and analysis efforts continue and improve. A program of ongoing data collection and analysis will be essential to monitor the changing hazardous waste stream in the county.

C. OVERALL TYPES AND VOLUMES OF HAZARDOUS WASTES

The current annual waste stream for Alameda County is summarized in Table 3-1 and shown graphically in Figure 3-1. It includes manifested wastes, estimates of wastes from small quantity generators, an estimate of wastes from leaking underground tank remediation, and an estimate of annual household hazardous waste generation. The total is just over 100,000 tons per year (200 million pounds).

Manifested wastes account for half of the estimated total county waste stream, and wastes from recycling operations account for fully another 15 percent of the total. These facts suggest that significant progress has been made in managing hazardous wastes in Alameda County. In many counties, 80 to 90 percent of all hazardous wastes appear to fall outside the formal manifest system. Recycling is desirable as a waste management technique; few counties in California can count wastes headed for recycling as up to one-quarter of their total manifested wastes.

Examination of manifest data reveals errors in the basic manifest listings, and shows that some listings--such as those for recycled products--can be misleading. The original total for 1986 manifest wastes in Alameda County was 66,694 tons, as shown on Table 3-2. Corrections and adjustments, as shown, isolate those hazardous wastes--50,267 tons--that comprise Alameda County's regular annual waste stream. The 15,834 tons of recycled wastes were isolated from other categories of the manifested wastes. The adjusted figure of 50,300 tons/year has been used in Table 3-1 for manifested hazardous wastes, plus another 15,800 tons/year of wastes designated for recycling.

Table 3-1 also shows the impact of small quantity generators in Alameda County; fully 32 percent of the estimated hazardous waste stream comes from several thousand small firms, outside the DHS manifest system. By comparison to the smaller generators, household hazardous wastes (1,900 tons) and contaminated soils from cleanup of leaking tanks (900 tons) are very small.

**Table 3-1
Hazardous Waste Summary
1986^a**

	Tons per Year
Manifested Hazardous Wastes ^b	50,300
Waste Oils (16,500)	
All Other Wastes (33,800)	
Small Quantity Generator ^c Hazardous Wastes ^d	32,100
Waste Oils ^e (22,600)	
All Other Wastes (9,500)	
Waste from Cleanup of Leaky Underground Tanks	900 ^f
Household Wastes ^g	1,900
Subtotal	85,200
Recycled Wastes	15,800
Oils (13,300)	
Solvents (2,500)	
TOTAL	101,000

^aAll waste streams are rounded to the nearest 100 tons per year. For actual value, see appropriate table.

^bSee Table 3-2 for correction method from formal DHS manifests.

^cEquivalent to a yearly waste stream of less than 13.2 tons (1,000 kg per month)

^dData generated from the No Survey Method outlines in the Technical Reference Manual developed by DHS.

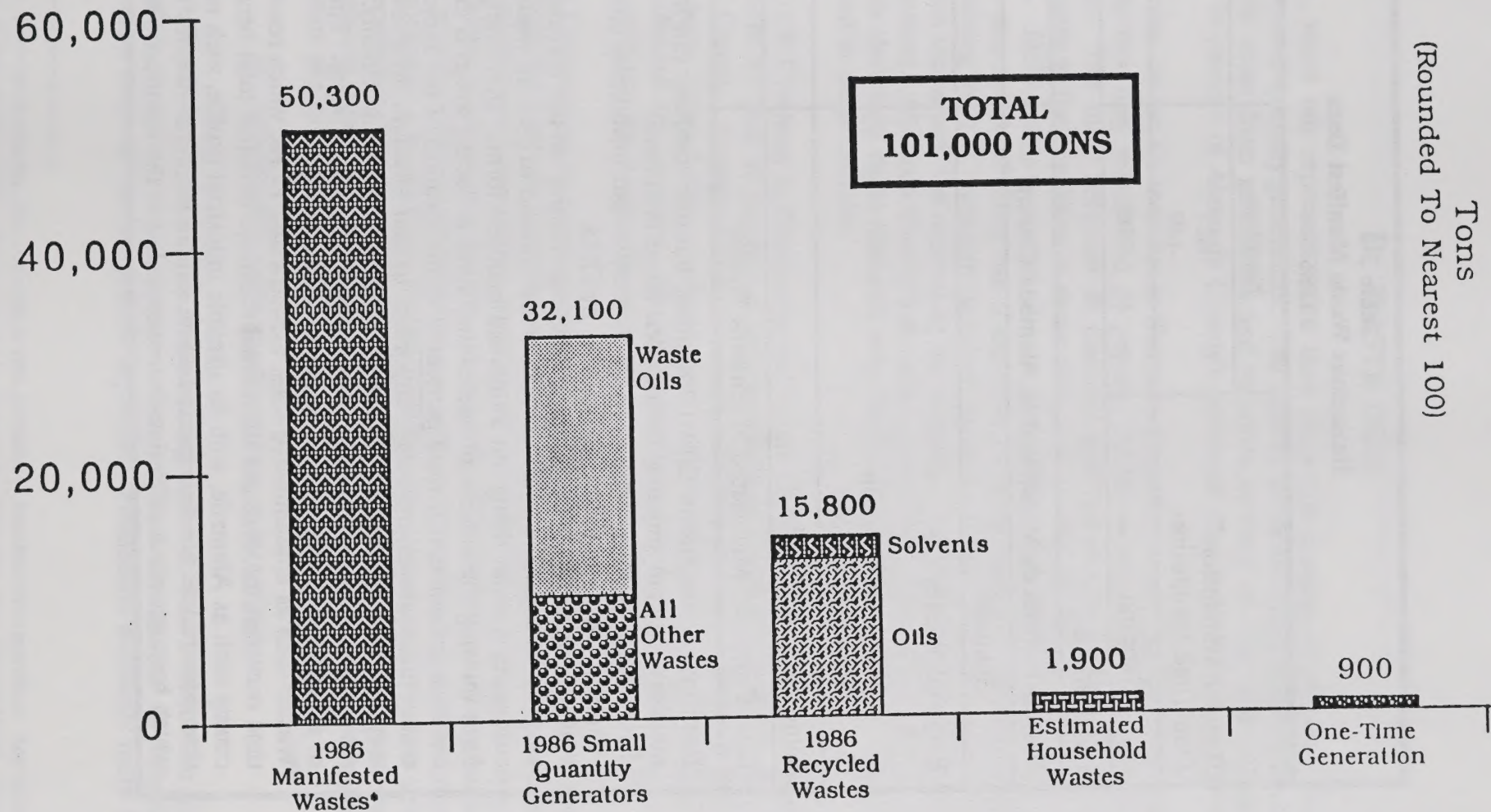
^eAdjusted to account for the amount of oil manifested in the county in 1986.

^fMean of range, 700 to 1,100 tons/year.

^gBased on estimate of 3.44 kilograms per year (7.56 pounds per year) from recent survey in Marin County. There are 492,271 households in Alameda County according to the Department of Finance (January 1, 1988).

FIGURE 3-1

Hazardous Waste Summary 1986



*Excludes One-Time And Recycled Wastes

Table 3-2
Hazardous Waste Manifest Data
1986

	Number	Tons
Regular Manifestors ^a	627	63,873
One-Time Manifestors	149	2,821
Subtotal	776	66,694
Corrections:		
Wastes Incorrectly Manifested in Alameda County ^b		(593)
Subtotal		66,101
Recycled Wastes ^c		
Waste Oil Products		(13,340)
Solvent Products		(2,494)
Subtotal Corrections ^d		(15,834)
Total Corrected Manifested Hazardous Wastes		50,267

^aEach manifestor has an EPA ID number, but one company can have multiple ID numbers. A company may be included more than once.

^bThese wastes were generated in other counties but mistakenly included in the Alameda county manifest list supplies by DHS.

^cWastes manifested by recyclers in Alameda County do not correlate with other kinds of hazardous wastes. Recyclers are allowed to pick up wastes from their customers without filling out a detailed manifest form. They complete a daily form showing the volume of wastes they have collected which is entered in the manifest system as if it were generated at the location of the recycler, when in reality these wastes are being "imported" to that location. Moreover, these recyclers pick up wastes from customers outside Alameda County, yet their manifests are keyed to their location within Alameda County. These wastes are so different that they deserve separate analysis.

^dWastes such as contaminated soils, asbestos and PCBs, which result from one-time occurrences, were not subtracted from the manifest total because in a large county such as Alameda, with its sizeable industrial profile, such nontypical, one-time occurrences are an expected waste stream element. Wastes from companies which have gone out of business were included in the manifest total.

D. WASTE OILS

In Table 3-1, waste oils represent more than twice the amount of all other wastes estimated for small quantity generators. The total of waste oils from small generators, combined with those from generators and recyclers covered on the DHS manifests, accounts for 36 percent of Alameda County's estimated total hazardous waste stream.

Table 3-3 focuses on the six recyclers in Oakland, Pleasanton, and Newark in operation in 1986. Together they manifested 24 percent (15,834 tons) of all 1986 manifested county wastes. The three recyclers in Oakland and the one in Pleasanton transfer hazardous wastes to their facilities in these cities, but are not the actual "generators" of these wastes. DHS grants variances for oil and solvent recyclers, allowing them to minimize the paperwork of filling out a manifest for each collection made during the day by submitting only a summary manifest to report the total amount of waste collected which shows only the address of the recycling facility, not the locations of the original generators. Alameda County's recyclers collect from many counties, yet their daily manifests show only these Alameda recycling facility addresses, even though some were generated in other counties.

All American Oil Company in Pleasanton and Waste Oil Recovery Systems in Oakland together account for over 90 percent of total waste recycling shown on 1986 manifests for Alameda County. Artesian Oil Recovery in Oakland is much smaller. Waste Oil Recovery Systems shows 5 tons of oily sludges sent for disposal, as well as the 5,275 tons of oils collected for recycling. All American Oil shows only the 6,149 tons of oil for recycling, with no oily sludges for disposal.

Safety Kleen Corporation in Oakland operates a recycling system for waste solvents, particularly from dry cleaners. This firm in 1986 showed 2,289 tons of solvents (over 97 percent nonhalogenated) headed for recycling in Oakland. Baron-Blakeslee recycled 196 tons of halogenated solvents in 1986. In Newark, RCA Oil Recovery is a waste oil hauler, not a recycler. This hauler's wastes are collected from firms in several counties and then deposited at a Santa Clara County transfer station each day. They are neither stored nor recycled at Newark; only the hauler's business office is there. The wastes are not necessarily generated in-county; and in-county efforts to reduce hazardous waste generation are not likely to significantly affect these totals.²

E. MANIFESTED HAZARDOUS WASTES

Table 3-4 lists Alameda County's cities in decreasing order of their contribution to the 1986 manifested hazardous waste stream. Geographical distribution of hazardous wastes shifts when recyclers are considered separately. Pleasanton manifests more than

²Evergreen Oil Inc., started an oil recycling plant in Newark in 1986, producing no hazardous waste byproducts. Approximately 21,000 tons of waste oil were recycled in 1987. Of this amount it is estimated that 2,700 came from Alameda County. Capacity of the plant is 35,000-42,000 tons per year. This plant significantly increases the County's waste oil recycling capacity.

Table 3-3
Waste Oil and Solvent Recycling Facilities in Alameda County
(By City and Waste Category Manifested)
1986

	Waste Oil for Recycling	Halogenated Solvents for Recycling	Nonhalogenated Solvents for Recycling	Oily Sludge from Recycling	Total	Percent of Total City Waste
Newark						
RCA Oil Recovery Baron-Blakeslee, Inc.	1,035	196			1,035 196	
Total	1,035	196			1,231	24
Oakland						
Artesian Waste Oil Recovery	876				876	
Safety Kleen Corporation		64	2,225		2,289	
Waste Oil Recovery Systems	5,275			5	5,280	
Total	6,151	64	2,225	5	8,445	49
Pleasanton						
All American Oil Company	6,149	9			6,158	82
Overall Total	13,335	269	2,225	5	15,834	
Percent of total manifested wastes in Alameda County: 24 percent.						

Table 3-4
Waste Stream Generation by City
1986 Manifest Data

City	No. of Manifests	Manifested Wastes (Corrected)		All Manifested Wastes	
		TPY	Percent	TPY	Percent
Oakland	201	8,707	17	17,152	26
Emeryville	36	7,379	15	7,380	11
Hayward*	115	7,305	15	7,305	11
Fremont	118	5,637	11	5,637	9
Newark	29	3,901	8	5,132	8
Alameda	31	3,759	7	3,757	6
Livermore	25	3,352	7	3,351	5
Berkeley	70	3,267	6	3,266	5
Union City	20	3,032	6	3,032	5
San Leandro	78	2,173	4	2,174	3
Pleasanton	20	1,378	3	7,537	11
Piedmont	24	91	<1	91	<1
Albany		46	<1	46	<1
Dublin		33	<1	33	<1
Unincorporated		206	<1	206	<1
TOTALS	776	50,266	100	66,101	101

*The City of Hayward Fire Department reports that Davis Walker installed a dryer in October 1987 to process metal containing sludge which reduces waste from 604 to 135 tons per year, a 78 percent reduction. In July 1988, Davis Walker installed an acid recovery system eliminating disposal of 4,120 tons of metal containing liquid. Total reduction of waste is from 4,724 to 135 tons per year, a 97 percent total reduction. This significantly reduces the portion of the County waste stream composed of metal containing liquids generated in the City of Hayward. As a result, total waste generated in the City of Hayward has dropped from 7,305 tons in 1986 to 3,716 tons in 1988.

any other city except Oakland because it is the location of All American Oil Company. When recyclers' manifests are excluded, however, Pleasanton drops.

Figure 3-2 shows this situation graphically. From the corrected data without recycling, Oakland, Emeryville, and Hayward account for 46 percent of the county's total. Although Emeryville contributed substantially to the manifested waste stream, only 36 generators, as compared with 201 in Oakland and 115 in Hayward, produced this waste. While two of these sources in Emeryville were large cleanups, the percentage of mid- and large-sized manifested generators in Emeryville is greater than in other Alameda County cities.

Inspection of the data shown in Table 3-5 reveals the types of manifested hazardous wastes generated by each city in the County. These data include all manifested wastes, the recycled ones among them (wastes from small generators are not included here).

Waste oils are manifested primarily in Oakland, Pleasanton, and Newark, locations of the three oil recyclers and one hauler. These wastes were not necessarily generated in these cities. Hayward generates a significant volume (506 tons) of waste oils. The Naval Air Station in Alameda also manifests a substantial amount (496 tons) of waste oil (672 tons in the city as a whole).

Miscellaneous waste is the second largest manifested waste category in Alameda County: 9,320 tons. Asbestos, inorganic solids, pharmaceuticals, aged organics, empty containers, photo and lab wastes, and household wastes are all included. These wastes represent a significant portion of almost every city's total manifested waste stream, but are particularly large in Oakland (2,238 tons), Emeryville (1,568 tons), and Berkeley (1,320 tons).

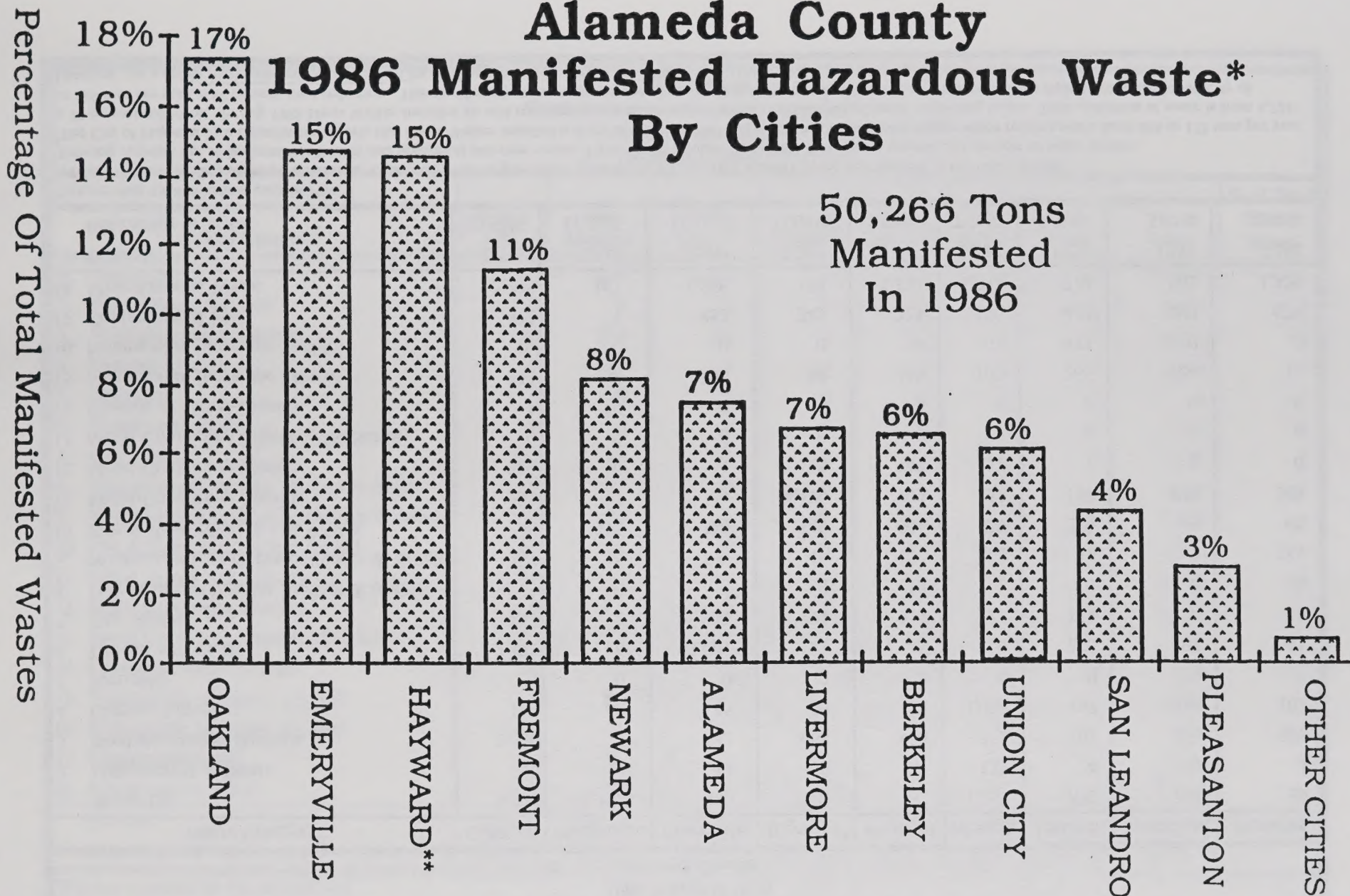
Metal-containing liquids compose the next largest portion of the waste stream: 6,922 tons. In Hayward, where 65 percent of the county's metal-containing liquids were generated in 1986, the Davis Walker Corporation produced 92 percent (4,120 tons) of these wastes. This company performs galvanizing processes which generate lead, zinc, and iron-containing liquids.³ The 703 tons in Fremont come from several companies, many of which are in the semiconductor industry. Lawrence Livermore National Laboratory generates 98 percent (852 tons) of the metal-containing liquids in Livermore (total of 872 tons).

³ The City of Hayward Fire Department reports that Davis Walker installed a dryer in October 1987 to process metal containing sludge which reduces waste from 604 to 135 tons per year, a 78 percent reduction. In July 1988, Davis Walker installed an acid recovery system eliminating disposal of 4,120 tons of metal containing liquid. Total reduction of waste is from 4,724 to 135 tons per year, a 97 percent total reduction. This significantly reduces the portion of the County waste stream composed of metal containing liquids generated in the City of Hayward. As a result, total waste generated in the City of Hayward has dropped from 7,305 tons in 1986 to 3,716 tons in 1988.

Alameda County

1986 Manifested Hazardous Waste* By Cities

50,266 Tons
Manifested
In 1986



*Does Not Include Recyclers Or All Small Quantity Generators

** The City of Hayward Fire Department reports that Davis Walker installed a dryer in October 1987 to process metal containing sludge which reduces waste from 604 to 135 tons per year, a 78% reduction. In July, 1988 Davis Walker installed an acid recovery system eliminating disposal of 4,120 tons of metal containing liquid. Total reduction of waste is from 4,724 to 135 tons per year, a 97% total reduction. This significantly reduces the portion of the County waste stream composed of metal containing liquids generated in the City of Hayward. As a result, total waste generated in the City of Hayward has dropped from 7,305 tons in 1986 to 3,716 tons in 1988.

Table 3-5
Waste Stream by Geographic Location^a
1986 Manifest Data
Alameda County

Waste Category ^b	Oakland	Pleasanton	Emeryville	Hayward ^d	Fremont	Newark	Alameda	Livermore	Berkeley
1. Waste Oil	6,974	6,195	166	506	132	1,267	672	201	89
2. Halogenated Solvents	370	12	14	59	21	132	24	190	4
3. Nonhalogenated Solvents	2,600	9	542	668	950	252	107	156	577
4. Organic Liquids	154	0	45	66	24	1,035	157	116	105
5. Pesticides	4	0	0	2	0	0	0	0	0
6. Dioxins and PCBs	2,372	6	3,001	51	48	0	266	202	11
7. Oily Sludges	457	2	333	794	344	127	174	78	5
8. Halogenated Organics Sludges & Solids	3	0	3	9	10	1	0	0	0
9. Nonhalogenated Organic Sludges & Solids	287	15	199	48	151	458	41	2	181
10. Dye & Paint Sludges and Resins	98	715	266	146	601	325	279	9	68
11. Metal-Containing Liquids	157	7	44	4,470	703	154	147	872	203
12. Metal-Containing Sludges	723	0	1	18	747	37	1	0	0
13. Metal-Containing Liquids (700 Series)	0	0	0	0	0	0	0	0	0
14. Cyanide & Metal Liquids	1	0	0	1	3	0	0	0	6
15. Nonmetallic Inorganic Liquids	232	408	356	84	445	100	267	724	18
16. Nonmetallic Inorganic Sludges	10	0	0	0	99	61	477	0	0
17. Contaminated Soil	472	1	852	245	225	150	427	299	679
18. Miscellaneous Waste	2,238	167	1,568	138	1,134	1,033	718	502	1,320
TOTAL	17,152	7,537	7,380	7,305	5,637	5,132	3,757	3,351	3,266
Percentage of Total	25.95%	11.40%	11.16%	11.05%	8.53%	7.76%	5.69%	5.07%	4.94%

^aGreater than 1,000 tons/year each in 1986.

^bOf the 776 manifested generators in Alameda County in 1986, 12 generators (greater than 1,000 TPY waste) created 52.4 percent of the waste stream.

^cExcluding recycles, out of business manifestors and nontypical one-time wastes, 5 generators (greater than 1,000 TPY waste) created 20.1 percent of waste stream.

^dThe City of Hayward Fire Department reports that Davis Walker installed a dryer in October 1987 to process metal containing sludge which reduces waste from 604 to 135 tons per year, a 78 percent reduction. In July 1988 Davis Walker installed an acid recovery system eliminating disposal of 4,120 tons of metal containing liquid. Total reduction of waste is from 4,724 to 135 tons per year, a 97 percent total reduction. This significantly reduces the portion of the County waste stream composed of metal containing liquids generated in the City of Hayward. As a result, total waste generated in the City of Hayward has dropped from 7,305 tons in 1986 to 3,716 tons in 1988.

**Table 3-5 (cont.)
Waste Stream by Geographic Location^a
1986 Manifest Data
Alameda County**

Waste Category^b	Union City	San Leandro	Castro Valley^c	Piedmont	Albany	Dublin	Sunol^c	Total	% of Total County Waste
1. Waste Oil	57	269	0	0	4	0	3	16,535	25
2. Halogenated Solvents	175	9	0	0	0	3	0	1,013	2
3. Nonhalogenated Solvents	59	574	166	0	3	8	0	6,671	10
4. Organic Liquids	3	27	1	0	0	0	0	1,733	3
5. Pesticides	0	0	0	0	0	0	0	7	<1
6. Dioxins and PCBs	18	0	0	0	0	0	0	5,975	9
7. Oily Sludges	852	48	6	0	1	1	0	3,222	5
8. Halogenated Organics Sludges & Solids	0	7	0	0	0	0	0	34	<1
9. Nonhalogenated Organic Sludges & Solids	936	70	1	90	0	0	0	2,479	4
10. Dye & Paint Sludges and Resins	63	175	0	0	0	12	0	2,757	4
11. Metal-Containing Liquids	153	15	0	0	0	1	0	6,928	10
12. Metal-Containing Sludges	0	3	0	0	0	0	0	1,530	2
13. Metal Containing Liquids (700 Series)	0	0	0	0	0	0	0	1	<1
14. Cyanide & Metal Liquids	26	0	0	0	0	0	0	37	<1
15. Nonmetallic Inorganic Liquids	276	6	0	0	0	0	0	2,905	4
16. Nonmetallic Inorganic Sludges	13	1	0	0	0	0	0	661	1
17. Contaminated Soil	42	901	0	0	0	0	0	4,292	7
18. Miscellaneous Waste	359	69	0	1	38	8	29	9,320	14
TOTAL	3,032	2,174	174	91	46	33	32	66,101	100
Percentage of Total	4.59%	3.29%	0.26%	0.14%	0.07%	0.05%	0.05%	100%	

^aFigures rounded to the nearest ton.

^bWaste categories defined in TRM.

^cUnincorporated Area

Another 10 percent (6,671 tons) of manifested county hazardous wastes are nonhalogenated solvents. Oakland manifests the major portion; here the Safety Kleen Corporation recycles (but does not necessarily "generate") 86 percent of these. The New United Motors assembly plant in Fremont is the other large nonhalogenated solvent manifestor. Painting newly assembled cars accounts for most of this waste. Other cities with relatively large contributions to the total include: Hayward (668 tons), Berkeley (577 tons), San Leandro (574 tons), and Emeryville (542 tons).

"Dioxins and PCBs," often associated with one-time cleanups, represent the fifth largest waste category manifested in Alameda County in 1986. Oakland's Schnitzer Steel Company and Pacific Gas and Electric, in Emeryville, each had one-time cleanups in 1986 that involved large amounts of PCBs. These cleanups account for the major portion of wastes manifested in this category.

Another waste generated primarily in one-time spill or leakage events is contaminated soil. It accounted for 6.5 percent of Alameda County's 1986 manifested waste stream: 4,296 tons. The County will probably continue to have a variable amount of contaminated oil in its waste stream due to leaking underground tanks and unforeseen industrial spills.

These six waste categories constitute 75 percent of Alameda County's 1986 manifested waste stream.

Table 3-6 lists the 12 manifestors in Alameda County who generated more than 1,000 tons each of waste in 1986: of the County's largest generators, three are recyclers: the County's largest, 10th, and 12th largest in the DHS manifest data. Two, Judson Steel Corporation (No. 5) and Peterbilt Motors (No. 9), are now out-of-business and will not generate hazardous wastes in the future. Pacific Gas and Electric (No. 8) and Schnitzer Steel (No. 11) reported wastes from one-time cleanup events that will not continue to contribute wastes.

Only five of the largest generators remain from the original list of 12: Davis Walker Corporation;⁴ New United Motors Manufacturing; Alameda Naval Air Station, Lawrence Livermore National Laboratories, and De Soto Incorporated.

In 1986, the 12 manifestors (0.5 percent of all manifestors) listed in Table 3-6 generated 52 percent of the county manifested waste stream. The adjusted total in Table 3-6 illustrates that when large-quantity recyclers, out-of-business manifestors, and generators of one-time cleanup wastes were eliminated, the adjusted total from large generators was 13,257 tons. In this light, 0.01 percent of all manifestors created 20.05 percent of the waste stream, with the other 99.99 percent of the manifestors creating 79 percent of the wastes. It is evident that a few large generators have a large impact on Alameda County's hazardous waste stream.

⁴ See footnote 3.

Table 3-6
Largest Hazardous Waste Generators in Alameda County^a

Generator	Waste Category																		Total	Adjusted Total	Comments
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
1. All American Oil, Pleasanton	6,149	9																	6,158		Recycler.
2. Davis Walker Corp., Hayward							604				4,120								4,724	4,724	
3. Desoto Inc., Berkeley			397	49						54							478	126	1,104	1,104	
4. GM New United Motors, Fremont*	92	2	721	23		40	295			420		538			1	57	114	948	3,251	3,251	
5. Judson Steel, Emeryville																		1,424	1,435		Out of business.
6. Lawrence Livermore Nat'l Lab, Livermore	95	58	37	80		194	67				852				21		299	345	2,048	2,048	
7. Alameda Naval Air Station, Alameda	496	16	85	86		95	107		18	55	66	1			248	394		463	2,130	2,130	
8. PG&E, Emeryville	2					2,981	3			1	1				152			5	3,145		Nontypical one-time waste.
9. Peterbilt Motors, Newark	4	2	40	1,019			97			133	1				8	61		114	1,479		Out of business.
10. Safety Kleen Corp., Oakland		64	2,226																2,290		Recycler.
11. Schnitzer Steel Co., Oakland						1,849													1,849		Nontypical one-time waste.
12. Waste Oil Recovery Systems, Inc., Oakland	5,275						5												5,280		Recycler.
Totals	12,113	151	3,506	1,257	0	5,170	1,178	0	18	663	5,040	539	0	0	430	512	891	3,425	34,893	13,257	
Percent of Total County	73.4	14.9	52.5	72.5	0	86.5	36.5	0	0.8	24.1	72.5	35.1	0	0	14.8	77.3	20.4	36.7	52.4 ^b	20.1 ^c	
*New United Motors Manufacturing has provided the following corrected 1986 data for wastes shipped offsite.	62	5	690			5	349		374	389							115	1,007	2,996		

^aGreater than 1,000 tons/year each in 1986.

^bOf the 776 manifested generators in Alameda County in 1986, 12 generators (greater than 1,000 TPY waste) created 52.4 percent of the waste stream.

^cExcluding recyclers, out of business manifestors and nontypical one-time wastes, five generators (greater than 1,000 TPY waste) created 20.1 percent of the waste stream.

Waste Categories:

- | | | |
|----------------------------|--|---|
| 1. Waste Oil | 7. Oily Sludges | 13. Metal-Containing Liquids (700 series) |
| 2. Halogenated Solvents | 8. Halogenated Organic Sludges & Solids | 14. Cyanide & Metal Liquids |
| 3. Nonhalogenated Solvents | 9. Nonhalogenated Organic Sludges & Solids | 15. Nonmetallic Inorganic Liquids |
| 4. Organic Liquids | 10. Dye & Paint Sludges & Resins | 16. Nonmetallic Inorganic Sludges |
| 5. Pesticides | 11. Metal-Containing Liquids | 17. Soil |
| 6. Dioxins and PCBs | 12. Metal-Containing Sludges | 18. Miscellaneous Wastes |

Table 3-7 provides data from the DHS manifests regarding the export and import of hazardous wastes from Alameda County.

The vast majority (almost 90 percent) of all manifested wastes were exported. The largest known recipient category (13,130 tons) is "unknown." Contra Costa County is second, at 12,013 tons. These wastes presumably went to the large IT Corporation complex in Martinez: Vine Hill/ Baker. (Note: most operations at this facility ceased in December 1987, when IT placed this facility--and others--up for sale). Kings County contains Chemical Waste Management, Inc.'s Kettleman Hills facility, and ranks next at 7,719 tons. Los Angeles County is the recipient for 6,623 tons. San Mateo is host to the Romic Solvent recycling facility and transfer station; it received a designated 5,317 tons. Solano County was next, at 4,912 tons; presumably these went to IT's Panoche landfill, closed in December 1986. Another 3,363 tons were shipped with DHS manifests to Santa Barbara County, location of the Casmalia Resources landfill. And, of the other flows over 1,000 tons, 1,979 tons were shipped to Santa Clara County, presumably most to the Solvent Services Company's transfer station in San Jose.

The 1986 manifest data indicate that a total of 111 firms in Alameda County used the Vine Hill/Baker complex in Contra Costa County. Now that this facility is closed, it is not known where these wastes are being managed. Table 3-8 summarizes available data on the 9,595 tons of wastes sent to this facility in Martinez in 1986; over 1,000 tons each of waste oils, organic liquids, oily sludges and resins; and over 2,000 tons of non-metallic inorganic liquids. Table 3-9 presents data on the 21 largest Alameda County generators using Vine Hill/Baker in 1986, each sending over 100 tons there. The six largest generators together sent almost 5,000 tons. All waste flows over 100 tons are shown. Details on all the individual generators are included in Appendix C.

F. SMALL GENERATOR WASTES

The No Survey Method in the TRM lists several industries as typical small quantity generators. The total number of Alameda County businesses in each of these industries, based on County Business Patterns data, is multiplied by conversion factors developed by DHS to determine the quantities of wastes each small generator produces. Tables 3-10 and 3-11 present data and estimates calculated using the No Survey Method. In a February 1988 survey of SQG, 305 of the 470 firms participating said they do not generate any hazardous waste. This finding may indicate that the number and amount of waste thought to be produced by SQG's may be high.

Because the wastes generated by these firms are diverse and the amounts generated per firm are small, owners and managers often have a difficult time disposing their wastes in an economical and environmentally-sound manner. Waste haulers are accustomed to dealing with larger waste generators and are resistant to accepting small amounts because of excessive per-shipment handling and disposal costs. The small

Table 3-7
Imports and Exports of Hazardous Wastes
Alameda County -- 1986

Waste Generated		Tons Per Year^{a,b} 66,101
Waste Exported	County Destination	
Contra Costa	12,013	
Fresno	972	
Kern	290	
Kings	7,719	
Los Angeles	6,623	
Orange	52	
Sacramento	1,192	
San Bernadino	225	
San Francisco	121	
San Mateo	5,317	
Santa Barbara	3,363	
Santa Clara	1,929	
Shasta	164	
Solano	4,912	
Sonoma	20	
Stanislaus	615	
Unknown	13,130	
Other (Out of State)	302	58,959
Waste Remaining in Alameda		7,142
Waste Imported		
Contra Costa	68	
Kings	1	
Los Angeles	1,317	
Continued		

Table 3-7
Imports and Exports of Hazardous Wastes
Alameda County -- 1986

Marin	33	
Orange	21	
Sacramento	181	
San Diego	1	
San Francisco	322	
San Joaquin	84	
San Luis Obispo	44	
San Mateo	3,347	
Santa Clara	203	
Santa Cruz	72	
Solano	7	
Sonoma	2	
Unknown	499	
Other (Out of State)	15	6,217
Net Waste to Alameda County		13,359

^aCorrected for 593 tons incorrectly manifested in Alameda County. See Table 3-2.

^bFigures rounded to the nearest ton.

**Table 3-8
Hazardous Wastes Entering
Vine Hill/Baker Facility From Alameda County Generators**

1 Waste Group/Waste Category	Tons
WASTE OILS	
221 waste and mixed oil	822
223 unspecified oil containing waste	241
	1,063
2 HALOGENATED SOLVENTS	
741 liquids w/halogenated organics 1,000 mg/L	52
	52
3 NONHALOGENATED SOLVENTS	
212 oxygenated solvent	4
213 hydrocarbon solvent	8
214 unspecified solvent mixture	91
	103
4 ORGANIC LIQUIDS	
133 aqueous with organics 10 percent	16
134 aqueous with organics 10 percent	1,001
342 organic liquid with metals	7
343 unspecified organic liquid mixture	166
	1,190
7 OILY SLUDGES	
222 oil/water separation sludge	1,019
352 other organic solids	2
	1,021
8 HALOGENATED ORGANIC SLUDGES AND SOLIDS	
451 degreasing sludge	6
	6
9 NONHALOGENATED SLUDGES AND SOLIDS	
241 tank bottoms	173
252 other still bottoms	87
491 unspecified sludge waste	23
	283
Continued	

**Table 3-8
Hazardous Wastes Entering
Vine Hill/Baker Facility From Alameda County Generators**

1 Waste Group/Waste Category	Tons
10 DYE AND PAINT SLUDGES AND RESINS	
291 latex paint	74
461 paint sludge	1,003
	1,077
11 METAL-CONTAINING LIQUIDS	
111 acids with metals	553
121 alkali with metals	739
132 aqueous with metals	359
	1,651
12 METAL-CONTAINING SLUDGES	
171 metal sludge	287
	287
14 LIQUIDS CONTAINING CYANIDES	
711 liquids w/cyanides 1,000 mg/L	3
	3
15 NONMETALLIC INORGANIC LIQUIDS	
112 acids without metals	214
113 unspecified alkali solution	18
122 alkali without metals	502
123 unspecified alkali solution	196
131 aqueous solution with reactive ions	1,041
135 unspecified aqueous solution	186
	2,157
16 NON METALLIC INORGANIC SOLIDS AND SLUDGES	
421 lime sludge	477
	477
18 MISCELLANEOUS	
331 off-spec., aged, or surplus organics	27
541 photochemicals/photoproc. waste	6
561 detergent and soap	20
581 gas scrubber waste	175
	228

Table 3-8 Hazardous Wastes Entering Vine Hill/Baker Facility From Alameda County Generators	
1 Waste Group/Waste Category	Tons
GRAND TOTAL	9,598

Table 3-9 Largest Alameda County Users of Vine Hill/Baker, 1986 (Tons)	
PETERBILT MOTORS, INC.	1,078
Aqueous solution with organic residues	(897)
Unspecified organics (nonsolvents)	(102)
NAVAL AIR STATION ALAMEDA	986
Lime sludge	(394)
Alkaline solution with metals	(169)
Waste oil and mixed oil	(132)
KAISER ALUMINUM & CHEMICAL CORP. I	824
Oil/water separation sludge	(780)
LAWRENCE LIVERMORE NATIONAL LAB	713
Alkaline solution with metals	(519)
Acid solution with metals	(121)
INTEL CORP. LIVERMORE CAMPUS	679
Aqueous solution with reactive anions	(664)
NUODEX	677
Paint sludge	(677)
KAISER ALUMINUM & CHEMICAL CORP. II	451
Aqueous solutions with reactive anions	(341)
Gas scrubber waste	(111)
SAN FRANCISCO CAN PLANT	386
Waste oil and mixed oil	352
NAVAL SUPPLY CENTER OAKLAND -- ALAMEDA FACILITY	364
Paint sludge	(148)
AC TRANSIT	359
Alkaline solutions without metals	(191)
Oil/water separation sludge	(157)
ARATEX SERVICES, INC.	331
Metal sludge	(252)
FMC CORP.	203
Acid solution with metals	(139)
Continued	

Table 3-9 Largest Alameda County Users of Vine Hill/Baker, 1986 (Tons)	
CAMPBELL CHAIN DIV., MC-GRAW EDISON CO.	197
Unspecified alkaline solution	(139)
CTS PRINTEX	169
PACIFIC GALVANIZING	160
Acid solution without metals	(160)
PACIFIC GAS AND ELECTRIC	152
Unspecified aqueous solution	(151)
NAVAL SUPPLY CENTER OAKLAND	147
Off-spec., aged or surplus inorganics	(105)
DEL MONTE CORP.	147
Unspecified oil-containing waste	(147)
FLINT INK CORP. CALINK DIV.	145
Alkaline solution with metals	(125)
H.B. FULLER CO.	127
Tank bottom waste	(106)
INDUSTRIAL ELECTRICAL MFG. INC.	102

TABLE 3-10
NO SURVEY METHOD SUMMARY
1986 COUNTY BUSINESS PATTERNS
ALAMEDA COUNTY

Industry	Tons per Year	% of Total	Business		WC1 ^b	WC2	WC3	WC4	WC5	WC6	WC7	WC8	WC9	WC10	WC11	WC12	WC13	WC14	WC15	WC16	WC17	WC18	TOTAL
			No. of	% of all																			
Pesticide End Users	4	0.01	5	0.07					3													1	4
Pesticide Appl. Ser.	207	0.65	210	3.03					133													74	207
Chemical Manufacturing	546	1.70	23	0.33	465	19	19	15				1	1		4			1	17			4	546
Wood Processing	41	0.13	10	0.14						41													41
Formulators	174	0.54	49	0.71		45	45	26	6						4	6		2	29			11	174
Laundries	219	0.69	222	3.21									219									0	219
Other Services	157	0.49	204	2.95		1	1	141											7			7	157
Photography	220	0.68	105	1.52		3	3	2						2	51	51			2			106	220
Textile Manufacturing	0	0.00	0	0.00																		0	0
Equipment Repair	143	0.45	265	3.83		56	56	20						1					6			6	143
Vehicle Maintenance	20,583	64.16	2,284	32.99	15,810	253	253	48						48		48			143			3,980	20,583
Construction	605	1.89	1,375	19.86		91	91	290						56					8			69	605
Motor Freight Terminals	10	0.13	8	0.12		1	1							2								6	10
Metal Manufacturing	6,639	20.70	829	11.97	5,089	66	66	19				9	9	34	45	85		45	1,132			40	6,639
Furn/Wood Mfr'g & Ref'g	597	1.86	84	1.21	494	14	14	19				2	2	45								7	597
Printing and Ceramics	299	0.93	387	5.59		36	36	5						25	17	3		12	18			147	299
Cleaning Agents	23	0.08	8	0.12		3	3	4	6			0 ^a	0						8			1	23
Other Manufacturing	960	2.99	118	1.70	687	90	90	57				1	1		22		6					6	960
Paper Industry	7	0.02	2	0.03		2	2	2				0	0						1			0	7
Educational & Voc Shops	42	0.13	123	1.78																			
Analytical & Clin. Labs	365	1.14	302	4.36		71	71	71						6					13			2	42
Wholesale & Ret. Sales	240	0.74	310	4.48		15	15	2	12					68			3		78			3	365
														20					18			158	240
TOTAL	32,085	100.00	6,923	100.00	22,545	771	771	732	160	41	0	13	232	307	132	193	9	60	1,480	0	0	4,628	32,085
Percent of Total Wastes					70.28	2.40	2.40	2.28	0.50	0.13	0	0.04	0.73	0.96	0.47	0.06	0.03	0.19	4.61	0	0	14.42	100.00

WASTE CATEGORIES

- | | |
|---|------------------------------------|
| 1. Waste Oil | 11. Metal-Containing Liquids |
| 2. Halogenated Solvents | 12. Metal-Containing Sludges |
| 3. Non-Halogenated Solvents | 13. Metal-Containing Liquids |
| 4. Organic Liquids | 14. Cyanide & Metal Liquids |
| 5. Pesticides | 15. Non-Metallic Inorganic Liquids |
| 6. Dioxins and PCBs | 16. Non-Metallic Inorganic Sludges |
| 7. Oily Sludges | 17. Soil |
| 8. Halogenated Organic Sludges & Solids | 18. Miscellaneous Wastes |
| 9. Non-Halogenated Organic Sludges & Solids | |
| 10. Dye & Paint Sludges and Resins | |

Notes:

^aLess than 0.5 tons per year.

^bAdjusted for manifested waste oil (see Table 4.1).

Table 3-11
Distribution of Small Generators by City
Alameda County
(No Survey Method)

City	Vehicle Maintenance ^a	(Tons/Year) Construction ^a	Metal Manufacturing ^b	All Other ^a	Total
Oakland	6,552	193	1,729	1,355	9,829
Fremont	3,026	89	570	626	4,311
Hayward	1,894	56	735	392	3,077
Berkeley	1,955	57	328	404	2,744
Alameda	1,389	41	379	287	2,096
Pleasanton	887	26	761	184	1,858
San Leandro	1,231	36	218	255	1,740
Livermore	1,033	30	338	214	1,615
Union City	918	27	305	190	1,440
Newark	722	21	518	149	1,410
Emeryville	91	3	741	19	854
Dublin	403	12	3	83	501
Albany	290	8	5	60	363
Piedmont	192	6	9	40	247
Totals	20,583	605	6,639	4,258	32,085

^aThese wastes were distributed by city assuming that each city generates an amount of waste that is proportional to its population.

^bMetal manufacturing wastes by city were determined assuming that each city generates an amount of waste from this business sector that is proportional to the amount of total corrected manifested waste for each city.

generators are in the position of being required to dispose their wastes properly but without reasonable and accessible means to do so.

Federal law (specifically, the Hazardous Waste and Solid Waste Management Amendments of 1984 to the Resource Conservation and Recovery Act) defines small quantity generators as those who generate between 100 and 1,000 kilograms of hazardous waste per month. California law does not differentiate between those who generate less than 100 kilograms per month and those who generate more, so California laws and associated regulations apply to all hazardous waste generators no matter what the quantity.

Small quantity generators are a highly diverse, broadly dispersed group. Many of them are small businesses without highly-trained personnel or sophisticated waste management practices such as auto repair shops, gas stations, dry cleaners, and printing and duplicating shops. Typical wastes include: contaminated solvents, paint sludges, plating solutions, photographic solutions, acids, and waste pesticides.

Table 3-12 summarizes the Alameda County small quantity generator waste stream profile. The estimate for waste oil is large, accounting for 70 percent (22,545 tons) of all small quantity generators generation.

Solvents (halogenated and non-halogenated combined) account for nearly 5 percent of these wastes (1,540 tons). Vehicle maintenance, construction, and manufacturing are the three industries that generate the most small generator solvent wastes. Each utilizes heavy machinery which is commonly cleaned with solvents.

Closely following solvents, in order of contribution to the small generator waste stream are non-metallic inorganic liquids (1,479 tons). These come primarily (77 percent) from metal manufacturing. Many processes involved in metal work require use of strong acids and bases.

Miscellaneous wastes compose a significant percentage (14 percent) of the small generator waste stream: 4,627 tons. Table 3-10 shows that these miscellaneous wastes are generated in large part by the vehicle maintenance industry. This estimate can be misleading because lead-acid batteries are one waste included in this miscellaneous waste category. In fact, the No Survey Method conversion formulas attribute approximately 85 percent of all vehicle maintenance wastes to batteries. All waste stream estimates are based on weight; thus, lead-acid batteries account for a disproportionately large amount.

From the perspective of different groups of small generators, vehicle maintenance accounts for 20,583 tons (64 percent of the total), and fully 33 percent of all the businesses covered. Waste oils are dominant, of course, at 15,810 tons; miscellaneous wastes account for most of the rest.

Table 3-12
Small Quantity Generator Waste Stream^a
Alameda County
No Survey Method

Waste Category	Tons Per Year	Percent
1. Waste Oil	22,545 ^b	70.27
2. Halogenated Solvents	771 ^c	2.40
3. Nonhalogenated Solvents	771 ^c	2.40
4. Organic Liquids	732	2.28
5. Pesticides	160	0.50
6. Dioxins	41	0.13
7. Oily Sludges	--	0.00
8. Halogenated Organic Sludges and Solids	13	0.04
9. Nonhalogenated Org. Sludges and Solids	232	0.73
10. Dye and Paint Sludges and Resins	307	0.96
11. Metal-Containing Liquids	143	0.44
12. Metal-Containing Sludges	193	0.60
13. Metal-Containing Liquids (700 Series)	9	0.03
14. Cyanide and Metal Liquids	60	0.19
15. Nonmetallic Inorganic Liquids	1,480	4.61
16. Nonmetallic Inorganic Sludges	0	0.00
17. Soil	N/A	
18. Miscellaneous Wastes	4,628	14.42
Total	32,085	100.00

^aBased on 1985 Alameda County Business Patterns.

^bThis number has been adjusted to account for the amount of oil manifested in 1986.

^cThese categories were split evenly since no distinction was made in EPA survey data.

Metal manufacturing accounts for another 21 percent of all small generator wastes: 6,639 tons. Most (5,089 tons) are again waste oils, plus 1,132 tons of non-metallic inorganic liquids. Together these two categories of small businesses account for almost 85 percent of all the wastes from these 6,923 firms; no other grouping comes to 3 percent by itself.

The estimates in Table 3-11 show the possible spread of hazardous waste generation by small generators among the 14 cities of Alameda County. These estimates are very approximate. Oakland accounts for 31 percent of the County's total: 9,973 tons. Fremont comes next at 4,217 tons; Hayward and Berkeley follow (3,079/2,805 respectively). Together these four cities account for 63 percent of the County total from small generators.

The summary in Table 3-13 illustrates that Alameda County's 6,923 small generators are for the most part (46 percent) small businesses with less than five employees. Only 9.3 percent have greater than 50 employees. This is shown graphically on Figure 3-3. It is significant to note that in the estimated waste stream small generators account for approximately one-third (32,085 tons) of the total estimated County hazardous waste stream, and that the major portion of these wastes comes from businesses with fewer than 50 employees.

SMALL QUANTITY HAZARDOUS WASTE GENERATOR SURVEY

1. INTRODUCTION

The purpose of this Alameda County Small Generator Survey was to confirm waste stream profiles for the major SQG industries in the County, and to obtain basic information about Alameda County's hazardous waste management practices and attitudes, particularly regarding barriers to further waste reduction.

A questionnaire was developed and survey undertaken to aid Alameda County in developing hazardous waste management programs suited to small quantity generators. The survey was also designed to demonstrate the usefulness of identifying small quantity generators by industry type.

Three types of industries in Alameda County were targeted for this survey of small quantity hazardous waste generators: vehicle maintenance, construction, and metals manufacturing. This selection was based on survey results from national studies,⁵ and on the results of applying EPA/DHS "No Survey Method" techniques to the county's

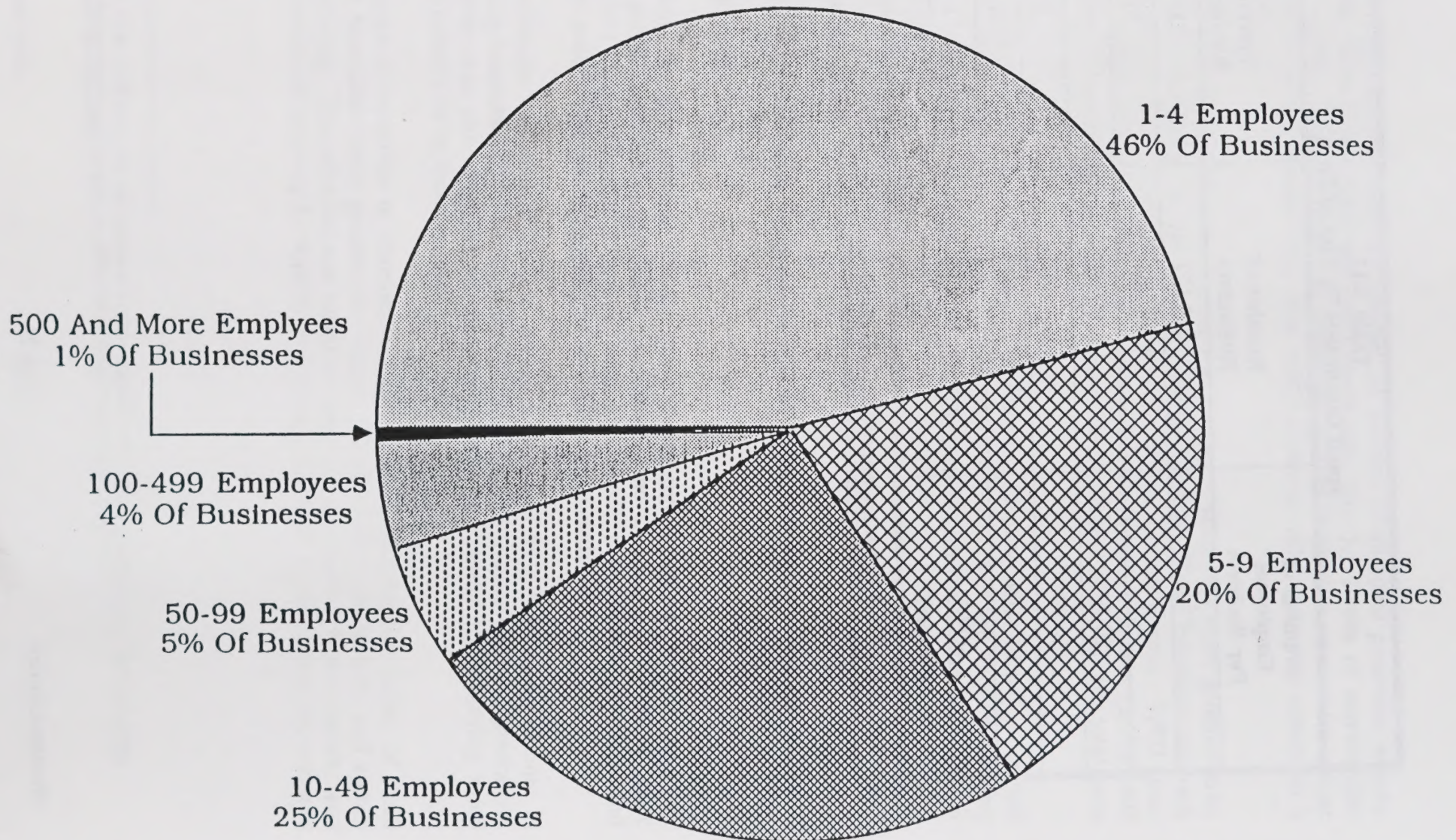
⁵Ruder, E.; Wells, R.; Battaglia, M.; and Anderson, R. (Abt Associates, Inc.) National Small Quantity Hazardous Waste Generator Survey-Final Report, prepared for EPA, Office of Solid Waste, February 1985.

**Table 3-13
Small Generators By Size of Firm^a**

Number of Employees Per Business	Number of Businesses	Percent of Businesses
1-4	3,177	46
5-9	1,395	20
10-49	1,701	25
50-99	329	5
100-499	284	4
500+	37	1
Total	6,923	101

^aSource: 1985 Alameda County Business Patterns

1986 Small Quantity Generators* In Alameda County



*6,923 Small Businesses Total

overall business patterns.⁶ Firms in these categories were randomly sampled using Standard Industrial Classification (SIC) codes for businesses in the three main industrialized cities of Alameda County: Oakland, Hayward, and Fremont.

These three industry categories comprise the three largest groups of small quantity generators nationally, and roughly 85 percent of all small quantity generators in Alameda County based on the results of the No Survey Method. Therefore, the results of this telephone survey can be considered representative of small quantity vehicle maintenance, construction, and metals manufacturing generators in Alameda County.

Each respondent was told that the survey was being conducted to provide background information for Alameda County's preparation of its hazardous waste management plan, and assured that all specific answers would be kept confidential. Respondents were asked: (1) if their business used any of a few industry-specific hazardous materials, and (2) if their business managed any other hazardous wastes not previously mentioned. A negative response to both questions terminated the survey process at that point. This could mean that the responses under-represent actual condition.

An initial pool of almost 1,200 businesses was drawn randomly from a recent listing of Alameda County businesses by SIC codes.⁷ During the three-and-a-half day interview period in February 1988, calls were placed to the telephone number listed for 874 of the firms.

Of the 470 cooperating firms, 305 (65 percent) said they did not generate any hazardous wastes; another 29 (6 percent) said they did not generate the hazardous wastes specified by the interviewer (from the lists supplied in the DHS TRM). These 29 firms were not asked the questions about how they managed the specific list of wastes, but did respond to the questions about waste reduction practices.

One hundred thirty-six Alameda County small businesses reported that they did generate one or more of the listed hazardous wastes, and responded to the complete interview: 56 in vehicle maintenance; 51 in metals manufacturing; and 29 in construction. Nearly all of these 136 firms generating hazardous wastes were small generators under the federal EPA definition (that is, they generate less than 1,000 kilograms of hazardous waste monthly). Of the three industry groups surveyed, small generators comprise 80 percent of vehicle maintenance, 90 percent of metals manufacturing, and the entire set of respondents from construction.

⁶The "No Survey Method" provides estimates of hazardous waste generation by typical firms in different industry groupings. These projections were applied to standard data on business patterns in Alameda County.

⁷The SIC codes used for each industry are listed in California Department of Health Services, Technical Reference Manual of the Guidelines for the Preparation of Hazardous Waste Management Plans. California Department of Health Services, Toxic Substances Control Division, Sacramento, California, June 30, 1987.

Table 3-14
Scope of Telephone Survey -- Alameda County Small Generators

Business Identified (Total)	1,200	
Telephone calls placed	874	
Telephone contact impossible	341	39 percent
Firms contacted	533	61 percent
Firms declining to disclose information	63	12 percent
Firms cooperating	470	88 percent
Firms reporting no hazardous waste generation	305	65 percent
Firms generating no hazardous wastes on DHS list	29	6 percent
Firms generating hazardous wastes on DHS list	136	29 percent
Firms responding to questions on waste reduction	165	
Firms responding to complete questionnaire	136	
Vehicle maintenance firms		56 (41 percent)
Metals manufacturing firms		51 (38 percent)
Construction firms	29	21 percent

In the first section of the survey, companies were asked to provide information about their years in business, size, and membership in trade associations. Responses to these questions helped situate these companies with respect to expected waste management. For example, some fairly new companies with few employees might not have any hazardous waste management policy whatsoever; yet other new companies may be more likely to be educated and aware of hazardous waste issues. The survey was partly designed to determine how and why such a business would or would not have a waste management or waste reduction plan.

The following three sections summarize each industry's waste streams and their disposal practices. Section 5 then discusses current and future waste reduction efforts, and crucial issues facing each of the three industries surveyed.

2. THE VEHICLE MAINTENANCE INDUSTRY

Fifty-six businesses in the Alameda County vehicle maintenance industry were covered in complete interviews: 27 "service only" stations; 16 "gas and service" stations; and 13 sales or rental companies. Half of these 56 companies had been in business less than 10 years. Most were small companies; 85 percent reported fewer than 40 employees, and half reported less than 8 full-time employees. Roughly one-third of these stations belonged to one or more of 9 different trade associations.

The major hazardous wastes generated by this industry grouping consisted of waste oils, brake fluids, cleaning solvents, lead-acid batteries, spent catalytic converters, and oil-based paints. Ninety-four percent of the waste oil generated by businesses in this sector was sent offsite to one of a dozen oil companies or oil recycling firms. The annual rates of waste oil generation ranged from 5 gallons to 13,000 gallons, with half of the businesses reporting that they generated 1,000 gallons or less annually.

Nearly all of the lead-acid batteries generated by service stations were sent offsite either to battery companies or to battery recycling firms. Roughly half of the firms generated 100 batteries or less annually, though one firm generated as many as 2,600 batteries each year.

Small amounts of brake fluid were generated by approximately half of the respondents, generally in the range of 20 gallons per year per company. A few franchise outlets of major oil companies produced much larger amounts, and one generated as much as 3,300 gallons of waste brake fluid annually.

A little over half of the stations surveyed reported that they generated cleaning solvents, most of which were disposed by the solvent hauling and recycling company Safety-Kleen. The average amount produced annually was roughly 190 gallons. Old catalytic converters and oil-based paints were generated in very small amounts.

3. THE CONSTRUCTION INDUSTRY

The construction industry is made up of many different contractor services. Twenty-nine interviews were completed with construction industry companies. These companies included firms specializing in:

- 1) Concrete pouring
- 2) Roofing
- 3) Heat and air conditioning installation
- 4) Glass installation
- 5) Painting and drywall installation
- 6) Insulation
- 7) Floors and tile installation
- 8) Refinishing
- 9) Metals/Plastics

Half of these companies had been in business 15 years or less, with a range of 2 to 68 years. These were small companies, half of them employing less than 10 employees. Almost two-thirds of the companies surveyed belonged to a trade association.

Roughly half of these companies reported that they disposed their waste thinners, paints, acids, and solvents offsite. The other half reported that they recycled their own hazardous wastes onsite. The largest waste streams consisted of thinner (1 to 1,040 gallons per year) and solvents (1 to 440 gallons per year).

Respondents were asked questions about waste pre-treatment at two different points in the survey. When asked if they pre-treated their wastes before disposing them into sewers, respondents consistently replied "yes." The answers were more useful in finding out if businesses pretreated wastes at all than in discovering whether or not people actually poured hazardous wastes into their sewers. This is true for all respondents in the three industry types surveyed.

Inferences made from the responses of these industry members can only be tentative due to the small sample size and the diverse nature of the businesses grouped under the "construction industry" category.

4. THE METALS MANUFACTURING INDUSTRY

Fifty-one completed interviews were obtained from diverse businesses in the metals manufacturing industry which consists of machine shops, sheet metal workers, sign manufacturers, metals manufacturing shops, tool and die shops, and wrought iron shops. Half of these companies had been in business nine years or more. Typically, these were larger businesses than those in the vehicle maintenance industry; half of them employ 16 or more employees. Almost two-thirds were members of trade associations.

Acids, oil-based paints, oxidizers, cleaning solvents, and rinse water from plating baths were all cited as wastes generated by this industry. Approximately two-fifths of the companies surveyed reported that they generated waste acids and alkalis; half of these wastes were hauled offsite, and the other half recycled onsite. Half of the companies generating waste acids produced less than 153 gallons annually.

Eighty percent of the respondents said that they generated waste cleaning solvents, half of them at levels below 60 gallons per year, but some as much as 13,000 gallons annually. One quarter of these businesses generated waste paint, mostly at levels below 100 gallons per year. Almost all of the wastes mentioned above were hauled away by recyclers or solvent-hauling companies.

5. CURRENT WASTE REDUCTION PRACTICES AND PLANS

The second part of the Alameda County Small Generator Survey focused on waste management efforts that these companies have made, as well as programs that they have planned for the future. By asking whether or not a company had already made efforts to reduce their wastes, the survey determined what means businesses had used to achieve waste reduction, along with a qualitative assessment of their success rates.

When asked if their companies had taken steps in the last three years to reduce the amount of hazardous waste generated, a little over one-third of the construction industry respondents answered "yes." Waste reduction actions were reported by two-fifths of the service stations and half of the metals manufacturing industry respondents.

Those companies that had reduced their hazardous waste streams were asked if they had achieved reductions through:

- Onsite Recycling
- Process or Procedure Changes
- Substitution (of production inputs)
- Pretreatment of Wastes
- Use of Consultants
- Internal Waste Audits
- Other Steps

Respondents were also asked if they felt that a given reduction scheme had reduced their waste streams "as much as possible," or if there was still "room for improvement."

Process changes rated consistently highest among all "waste reducers." A significant amount of product substitution also occurred in all three industries, (approximately 60 percent of all waste reducer respondents reported trying some form of product substitution). Roughly two-thirds of the vehicle maintenance and metals manufacturing respondents who had used process changes and substitution reported that their efforts had reduced wastes "as much as possible." Answers from the construction industry

revealed that construction businesses had even more success with process changes and substitution.

Of the "waste reducers," one-quarter of the vehicle maintenance and construction industry respondents, and one-third of the metals manufacturing respondents had used the services of a consultant. The two respondents from the construction business who had used a consultant reported having improved their waste reduction efforts as much as possible, while a small number of vehicle maintenance and metals manufacturing industry respondents said that there was still room to improve upon the waste reduction they had achieved with the services of a consultant. Two-thirds of the metals manufacturing businesses who had reduced their waste production had performed an internal audit of their hazardous waste generation streams. Audits had been done by a smaller proportion of vehicle maintenance (42 percent) and construction (30 percent) industry respondents, though this level of interest in use of waste audits is still quite impressive. Only the vehicle maintenance respondents reported that there was still significant room for improvement after completing their internal waste audits.

Of the "other methods" cited for reducing hazardous wastes, most were either onsite recycling plans (very prevalent among construction industry respondents), process changes that discontinued the use of a class of chemicals, or changes in the spectrum of services offered.

Both "waste reducers" and "nonreducers" were then asked if and how they had received information on waste reduction: from seminars or meetings, trade associations, suppliers, or the government. Approximately one-half of the respondents reported receiving information from trade associations. Suppliers generally reached more of the companies (60 percent). This was somewhat less true of metals manufacturing businesses; here 40 percent were reached by suppliers. Government agencies reached 40 to 50 of the companies surveyed.

Evidently, information about hazardous waste management is available and being distributed to many small quantity generators. For example, only 11 percent of the vehicle maintenance respondents reported receiving no information from trade associations, suppliers, or government agencies. A quarter of this group had received information from all three of these sources. This same group was less well-supplied with new information on changing laws and regulations regarding hazardous waste disposal (a final section at the end of the survey asked respondents how well they were kept abreast of ongoing legislation and administrative rule changes concerning hazardous waste management). Almost a quarter of the respondents had received no information on changing laws from either their trade associations, suppliers, or the government; indeed, only 17 percent of those who answered the "changing laws" questions received information from all three sources.

These results were mirrored fairly closely by the construction industry respondents, but substantially fewer metals manufacturing businesses reported receiving very much information--from any source. It can be inferred from the survey results that no single

source of information consistently supplied industry members with both general hazardous waste management information and follow-up information at regular intervals on changing laws and regular requirements. It should also be noted that this issue is a relatively minor one to many small generators, in contrast to large businesses, academics, consultants, and lawyers who pay attention to these issues. Dry cleaners and service stations rarely have time to do so. They care most about those regulations actually in effect that directly affect them--usually limited to those requirements actually being enforced by local health, sewer, or fire agencies.

In the next section, respondents were given five questions concerning various forms of aid for managing and reducing hazardous wastes. These included assistance with regulations and permits, information on waste minimization techniques, onsite consultations, financial assistance, workshops, printed information, or toll-free information lines.

Members of the metals manufacturing industry expressed the most interest in these possible assistance packages. Approximately half said they would request help with laws, minimization techniques, and onsite consultations.

Only a quarter of these respondents expressed any desire for financial assistance, however. This may mean that they did not fully understand the question. For example, they might not want a loan if they were afraid they could not pay it back; or some may be so unaware that they do not realize that effective regulatory compliance costs money.

Roughly two-thirds of the construction industry respondents reacted favorably to the idea of receiving assistance in understanding laws and regulations, in learning about waste minimization techniques, and in receiving onsite consultations. Only a quarter of these respondents expressed any desire for financial assistance, however.

Similarly, approximately two-thirds of the vehicle maintenance industry respondents reacted favorably to receiving assistance in understanding laws and regulations, in learning about waste minimization techniques, and in receiving on-site consultations. In this industry, a larger number (two-thirds) of the companies said that they would request financial assistance if it were available.

Most of the respondents preferred a mix of toll-free information lines and printed information to acquire information on managing and reducing their hazardous wastes. Construction industry respondents favored the toll-free lines slightly more than the printed information option.

Regardless of business type, almost all of those businesses who achieved some waste reduction did so with their own capital. Of those companies that did reduce their hazardous wastes, few expressed any interest in seeking financial assistance to further their waste reduction programs (62 percent 'no,' 27 percent 'yes,' the remainder 'not sure'). On average, two-thirds of all the respondents who did not reduce wastes were

also uninterested in seeking financial assistance for waste reduction. Almost no respondents reported using any other financing arrangements such as bank loans, Small Business Administration (SBA) loans, or leasing schemes for waste management and reduction equipment.

6. PROGRAM PROPOSALS

An information center for hazardous waste management and reduction, could be accessed by a toll-free information line. Operators of an information center could be very efficient if they had access to on-line data that covered general issues as well as process-specific waste management details. A highly cross-referenced data base and/or links to appropriate agency officials and waste management firms should, ideally, enable information center operators to maintain a short turn around time for consultations.

G. WASTES FROM LEAKING UNDERGROUND TANKS

A small but predictable element of Alameda County's hazardous wastes will be contaminated soils from leaking underground tanks. The Regional Water Quality Control Board (RWQCB) is the lead agency monitoring identification and cleanup of contamination from leaking tanks. Table 3-15 presents estimates, based on RWQCB data and manifest data for tank cleanups, for the amount of contaminated soil that leaking underground tank excavations will produce in a typical year. There are 5,614 tanks in Alameda County. Approximately 10,520 tons of contaminated soil will require excavation due to leaks in these tanks. Based on a 10- to 15-year remediation schedule, this will generate approximately 900 tons of hazardous waste each year until remediation is complete.

H. HOUSEHOLD HAZARDOUS WASTES

An estimated 1,900 tons of hazardous waste are generated annually by Alameda County's 492,000 households, 7.56 pounds per year each, based on a recent survey in Marin County.

Households were recognized as a significant source of hazardous waste in the early 1980s. Pilot programs in Seattle, Washington and in Massachusetts inspired communities across the United States to learn more about the hazardous wastes generated by households; to educate residents about safer use, storage, and disposal; and to organize collection events to promote safer and more environmentally-sound disposal. Other problems associated with household hazardous waste include: contaminated leachate from municipal landfills, safety hazards to refuse collectors into and landfill operators, contamination of septic tanks, contamination into sanitary and storm sewers, and air pollution in urban areas due to evaporation of volatiles.

Table 3-15
Contaminated Soil From Underground Tank Cleanups^a

Fuel Tanks	4,187
Farm Fuel Tanks	92
Other Tanks ^b	1,335
TOTAL TANKS	5,614
Estimated Leaking Tanks	1,965 ^c
Estimated Tanks Requiring Soil Excavation ^c	561
Soil per Excavation ^d	25 Tons
Estimated Soil Excavation Requirement	14,025
	0.75 ^e
Estimated Probable Soil Excavation	10,520 Tons
Yearly Contaminated Soil Generation	700-1, 050 Tons Per yr ^f

a Tank census based on data from RWQCB Underground Container Program, 5/87

b Other than fuel storage; e.g., waste oil, solvent, etc.

c Based on national surveys, approximately 35 percent of all underground tanks will leak and another 10 percent of all tanks have required soil excavation.

d Based on 11 soil excavations in Alameda, Sonoma, and Marin Counties from DHS manifest summaries that clearly showed excavation for fuel tank remediations.

e Assume 75 percent of all leaking tanks are identified (consultant estimate).

f Based on a 10- to 15-year tank remediation schedule (consultant estimate).

The generation of household hazardous waste in Alameda County can be described in two ways: (1) in terms of estimated average amounts generated by each household in the county, and (2) in terms of amounts collected during household hazardous waste collection programs sponsored by various cities around the county. The first method is an extrapolation with many remaining uncertainties, and the second, though an actual measured volume, represents only the contribution of a highly motivated sector of the population and includes at least some material stored over a long period of time, not generated in one year.

Two studies have been conducted in the Bay Area in the last few years to determine the average amount of hazardous waste generated by individual households each year. Both studies were sponsored by the Association of Bay Area Governments (ABAG).

A 1985 study investigated household hazardous waste generated in the Bay Area and analyzed possible management approaches. The study included an analysis of use and disposal of hazardous household products in Hayward. Homeowners and tenants were questioned about the following product types:

- * Household Cleaners
- * Chemical Drain Openers
- * Auto/Furniture Polishes
- * Engine/Gasoline Cleaners
- * Antifreeze
- * Paints/Paint Thinners
- * Wood Preservatives
- * Pesticides (Insecticides)
- * Herbicides
- * Pool Chemicals
- * Motor Oil
- * Radiator Flushes

The respondents were also asked about how these products were discarded and in what volumes. Disposal methods included:

- * Poured into Storm or Sanitary Sewers
- * Discarded in Municipal Trash Collection
- * Poured on the Ground
- * Poured onto the Street
- * Stored in a Basement or Garage
- * Recycled

This study estimated a range of average annual volumes of hazardous waste from 1.8 to 3.5 gallons per household. More than half the homes surveyed used cleaners, pesticides, polishes, and paints/thinners. About a third discarded motor oil and antifreeze, even more so in suburban residential areas. The most common disposal method was in the municipal trash. Though motor oil was more frequently recycled

than other products in 1985, falling crude oil prices since that time have decreased the availability of free oil recycling services and the practice has become less common. Using a 1987 California Department of Finance estimate of 492,000 households in Alameda County, the data from this ABAG study would indicate a countywide annual generation rate of between 886,000 and 1,723,000 gallons per year.

Another ABAG-sponsored study was conducted in 1986 by University of Arizona anthropologists. This study involved collecting waste material directly from the curb in several Marin County neighborhoods (about 1,000 households). The hazardous materials were then identified and weighed (the container weight was not included). Wastes included toilet bowl cleaners, bleach, cleansers, oil, antifreeze, batteries, pool chemicals, hobby products, and many other associated materials. Researchers estimated that the average household generated about 66.2 grams of hazardous waste each week, or about 3.44 kilograms per year (7.56 pounds per year). Extrapolating this estimate for the 492,271 households in Alameda County, this second ABAG study would indicate an annual countywide generation of about 1,860 tons.

It is important to remember that household hazardous waste is a relatively new area of study and average per household estimates are somewhat controversial. Study criteria tend to vary, and weight estimates cannot be directly compared to volume estimates. As more and more corroborating data are collected, the volume of hazardous waste generated by households will be more accurately determined.

I. CONCLUSIONS

Table 3-16 and 3-17 are designed to pull all these data together in a concise form. Types of waste are shown in Table 3-16, from those 770 firms using the manifest system plus 6,923 firms not using manifests and the households and underground tank cleanup estimates. These summary data exclude only the recycled wastes.

The countywide total of 85,107 tons is dominated by waste oil (30%), almost entirely from small generators outside the manifest system (88%). Miscellaneous wastes account for another 18 percent of the countywide total; here they split 60/40 between those using the manifests and those outside the system. Several other large total waste streams are worthy of note.

- Metal-containing liquids, 7,070 tons, 98% manifested
- Non-halogenated solvents, 5,217 tons, 85% manifested
- PCBs and dioxins, 6,016 tons, 99% manifested (one-time cleanup wastes).

Table 3-17 summarizes total hazardous waste generation in Alameda County by location. As expected by its size and industrial base, Oakland is the largest source by far of waste generation: 19,330 tons (23% of the county total). This sum is split rather equally between those small firms outside the manifest system and those using

Table 3-16
Total Hazardous Waste Generation, By Type -- 1996
Alameda County
(Excludes Recycled Wastes)

Waste Category	Manifested Waste	Small Generators Wastes	Household Wastes	Tank Cleanup Wastes	Total
Waste Oil	3,196	22,545	--	--	25,741
Halogenated Solvents	744	771	--	--	1,515
Nonhalogenated Solvents	4,446	771	--	--	5,217
Organic Liquids	1,733	732	--	--	2,465
Pesticides	6	160	--	--	167
Dioxins + PCBs	5,975	41	--	--	6,016
Oily Sludges	3,222	--	--	--	3,222
Halogenated Organic Sludges and Solids	34	13	--	--	47
Nonhalogenated Org. Sludges and Solids	2,479	232	--	--	2,711
Dye and Paint Sludges and Resins	2,757	307	--	--	3,064
Metal-Containing Liquids	6,927	143	--	--	7,070
Metal-Containing Sludges	1,530	193	--	--	1,723
Metal-Containing Liquids (700 Series)	1	9	--	--	10
Cyanide and Metal Liquids	37	60	--	--	97
Nonmetallic Inorganic Liquids	2,905	1,480	--	--	4,385
Nonmetallic Inorganic Sludges	661	0	--	--	661
Soil	4,292	N/A	--	896	5,188
Miscellaneous Wastes	9,320	4,628	1,860	--	15,808
TOTALS	50,266	32,085	1,860	896	85,107

Table 3-17
Total Hazardous Waste Generation, By City -- 1986
(Excludes Recycled Wastes)

City	Manifested Wastes (Corrected) TPY	Small Generation Wastes TPY	Household Wastes^a	Tank Cleanup Wastes^a	Total
Oakland	8,707	9,829	536	258	19,330
Emeryville	7,379	854	7	4	8,244
Hayward	7,305	3,077	155	75	10,612
Fremont	5,637	4,311	247	119	10,314
Newark	3,901	1,410	59	28	5,398
Alameda	3,759	2,096	114	55	6,024
Livermore	3,352	1,615	85	41	5,093
Berkeley	3,267	2,744	160	77	6,248
Union City	3,032	1,440	75	36	4,583
San Leandro	2,173	1,740	100	48	4,061
Pleasanton	1,378	1,858	73	35	3,344
Piedmont	91	247	16	8	362
Albany	46	363	24	11	444
Dublin	33	501	33	16	583
Unincorporated	206	*	176	85	467
	50,266	32,085	1,860	896	85,107

^a Assumed proportional to population.

manifests (45% manifested). Clearly small-generator wastes from Oakland (9,973 tons) are a major priority for attention under this plan.

Three other cities appear as large sources of waste generation; here, however, the relative proportions of manifest/small generator are quite divergent:

- Hayward, 10,612 tons, 69 percent manifested
- Fremont, 10,314 tons, 55 percent manifested
- Emeryville, 8,244 tons, 90 percent manifested

Emeryville is dominated by larger generators using DHS manifests; Fremont has a very large small-generator component; and Hayward falls into the more-balanced category. Together these three cities account for another 34 percent of the county total.

Seven more cities fall into the net range in terms of their waste generation (from 3,323 to 6,309 tons). Again, the relative importance of small businesses to the total is quite varied.

- Berkeley, 6,248 tons, 52 percent manifested
- Alameda, 6,024 tons, 63 percent manifested
- Newark, 5,398 tons, 72 percent manifested
- Livermore, 5,093 tons, 66 percent manifested
- Union City, 4,583 tons, 66 percent manifested
- San Leandro, 4,061 tons, 53 percent manifested
- Pleasanton, 3,344 tons, 41 percent manifested

Together these seven account for 41 percent of the county total.

CHAPTER 4

CURRENT HAZARDOUS WASTE MANAGEMENT PRACTICES IN ALAMEDA COUNTY

A. OVERVIEW

It is estimated that some 7,700 hazardous waste generators in Alameda County use a wide array of treatment and disposal practices but sound data on which to quantify these activities reliably is not available.

Many hazardous waste generators ship their wastes offsite for treatment or disposal: 776 manifests were completed in 1986. This includes the few large generators who account for a sizeable proportion of all manifested wastes. Many of these manifested wastes were exported to other counties. Based on 1985 County Business Patterns, it is estimated that more than 6,900 firms generated hazardous wastes but did not use a manifest in disposing them. Results of the phone survey of small generators described in Chapter 3 indicate that this estimate may be high; 65% of the small businesses surveyed indicated that they do not generate hazardous waste.

B. PAST PRACTICES

Alameda County is typical of many older industrialized areas where facilities use hazardous materials and generate hazardous wastes. In the past, hazardous wastes have been disposed in unlined industrial and municipal landfills, or at surface impoundments used solely to minimize costs with no particular regard to their environmental implications. Hazardous materials were stored underground in single-walled tanks. Double-walled tank systems, which would guard against leakage, were not considered necessary until the late 1970's. The lack of information or financial incentives to handle hazardous wastes properly led to many corporate and governmental decisions which resulted in inadequate management of these materials through the end of the 1970's, and early 1980's.

More recently, even with new hazardous waste regulatory legislation in place, full compliance has been difficult to achieve. While much has been accomplished already (including county inspections of some 1,500 hazardous waste generators in Alameda County, and extensive hazardous materials regulatory programs in effect in seven of the fourteen cities), far more remains to be accomplished. For generators, hazardous waste management laws represent extra expense for transport and disposal and fees for generator permits, as well as extra effort to comply with a complete set of laws from which they will not immediately or directly profit. Also, because of inadequate education, many generators, especially small quantity generators, still remain unaware that they even produce hazardous wastes which require special (and increasingly expensive) control.

Alameda County's District Attorney has been one of the most aggressive in California in identifying and prosecuting those caught in acts of illegal hazardous waste disposal. Enforcement of hazardous waste laws and programs has led in recent years to the discovery of several contaminated sites in Alameda County. The 22 sites listed on Table 4-1 are currently under investigation and corrective action under the Hazardous Substance Cleanup Bond Act of 1984; 30 more sites have been identified under the Calderon Bill (AB 3525/3374). Further details are presented in Appendix E. Soils and groundwater at these locations in two different cities are contaminated with solvents, waste oils, metals, and other hazardous wastes.

Private responsible parties are providing resources for cleanup at 14 of the 22 Bond Act sites. Two other Bond Act sites are federal facilities. The 30 Calderon sites are contaminated landfills. They are ranked, at 12 levels, according to the degree of threat they pose to public health. This is determined by investigating the landfill's potential to contaminate groundwater, and the amount of suspected hazardous waste dumping which has occurred at the site. A ranking of 1 indicates the most serious threat; 12, the least. Rankings for the 30 Alameda County Calderon sites are also listed in Appendix E.

The local Regional Water Quality Control Board (RWQCB) monitors investigation and cleanup of contamination from leaking underground tanks. The RWQCB and DEH implemented an underground tank inspection program. Approximately 560 leaks from underground tanks which will require soil excavation are expected for Alameda County. With continual inspection and cleanup programs in place, this should generate approximately 900 tons of contaminated soil per year, for the next 15 years. By that time, leaks from older tanks will have been cleaned up and soil excavation needs will decline greatly. Newer tanks are designed to avoid the leaks to which the older tanks were susceptible.

As education about potential dangers of hazardous waste is expanded, and enforcement programs gain strength, it is probable that more contamination from the past will be discovered. It is essential that both private industry and public agencies are responsive and effective in cleaning up these sites as they are identified.

C. ONSITE WASTE MANAGEMENT

Many firms using the manifest system, and others, also employ a wide variety of onsite hazardous waste management practices. These include onsite recycling of solvents, neutralization of acids, and precipitation of metals in onsite treatment units. A few firms may still employ onsite land disposal: in pits, ponds, lagoons and other surface impoundments. These techniques are increasingly being phased out under regulatory pressure from the Regional Water Quality Control Board under the Toxic Pits Cleanup Act (TPCA) of 1985 (Katz, AB 3566).

**Table 4-1
Remedial Action Sites in Alameda County**

Alameda	Alameda Naval Air Station
Albany	Western Forge and Flange*
Berkeley	Berkeley Auto Repair
Emeryville	Electro Coatings Pacific Gas and Electric Westinghouse Electric
Fremont	Amchem Products
Livermore	Lawrence Livermore Lab
Newark	FMC Corporation Leslie Salt
Oakland	Aero Quality Plating Clorox Company Ekotek Lube L and M Plating Port of Oakland Southern Pacific
San Leandro	100 - 39th Street Factor Avenue Plume Trojan Powder Works
Union City	Pacific States Steel U.S. Pipe and Foundry
*This site was mitigated in June of 1987.	

In an effort to identify the types of onsite waste management currently utilized in Alameda County, interviews were conducted with businesses which have applied to DHS for variances. These are permits to treat, store, or dispose wastes onsite. This information is not representative of all businesses in the County. Those which have applied for variances are aware that they generate hazardous wastes, and that they must comply with certain regulations for its effective onsite treatment.

The industrial profile of Alameda County's hazardous waste generators--a small base of large quantity generators and a broad base of small quantity generators--shows potential for successful use of onsite waste treatment technologies. Alameda County's large quantity generators are also large businesses, which typically can most easily afford and accommodate onsite treatment systems.

The Department of Health Services (DHS) lists 24 TSD facilities in Alameda County. Of these, three (All American Oil Co., Pleasanton; Evergreen Oil, Inc., Newark; Waste Oil Recovery Systems, Inc., Oakland), are commercial waste oil recyclers, and two (Baron-Blakeslee, Inc., Newark; Safety Kleen Corporation, Oakland) are commercial solvent recyclers. CP Inorganics, Inc. in Union City commercially recycles spent etchants from the electronics industry to retrieve copper. One other facility uses onsite recycling techniques. Engelhard Industries West, Inc., in Union City recovers precious metals from waste metal solutions. Currently, they do not recycle their rinse water, but are interested in doing so. Pfizer, Inc. in Emeryville has a TSD permit so that onsite aqueous treatment of metal-containing solutions and neutralization can be practiced at the plant.

Three landfills were listed in the DHS data: Altamont in Livermore, which in addition to Municipal Solid Waste, accepts infectious and asbestos wastes, Durham Road in Fremont also a sanitary landfill, and the State of California Department of Transportation in Oakland. The East Bay Disposal Company in Fremont is listed with DHS as a transporter, as a Registered California Hazardous Waste Hauler, for the purpose of hauling a limited list of hazardous wastes such as asbestos and infectious waste. Five of the TSD facilities listed (Electrofusion Corp., Fremont; Myers Container Corp., Oakland; National Starch and Chemical Corp., Berkeley; and two Naval Supply Centers, Oakland and Alameda) have permits for storage of hazardous wastes beyond 90 days. DC Chemical in Union City no longer produces hazardous waste, and EZ Kleen Manufacturing in Castro Valley is closed. The remaining TSD facilities listed could not be reached to explain in what capacity their TSD permits are used.

One hundred fifty-three businesses in Alameda County have applied to DHS for variances in order to treat, store, or dispose hazardous wastes onsite. Several of these companies were contacted to find out how they intend to use their variances. The majority of firms contacted applied for a variance to store their hazardous wastes for a period longer than 90 days. Fourteen variance applicants were metal plating shops. In most of these cases onsite treatment such as neutralization, and dewatering of metal-containing sludge is being performed. Then, sludges are drummed and transported to hazardous waste disposal sites. One firm, Alta Plating in Oakland

recycles its rinse water. Most platers interviewed were very receptive to the idea of working together with other platers and with Alameda County to find cost effective means of treating and disposing their hazardous wastes. A common complaint was that the regulatory requirements regarding hazardous wastes are complicated and confusing. They encountered difficulty in getting explanations regarding the regulations.

All companies contacted were interested in recycling and other waste treatment and reduction methods. However, they cited the expense of onsite treatment as a major barrier. Permitting and regulatory compliance were mentioned by several businesses as factors deterring onsite treatment.

There are an estimated 6,923 small generators that do not appear to be covered by the manifest system. Yet together they account for 22,600 tons of waste oils and 9,500 tons of other hazardous wastes. Some of these smaller businesses probably used the manifest system incorrectly, and thus ended up in the suspense file. Others may dispose their hazardous wastes in ways that range from misguided to illegal. Some wastes may be stored for long periods of time (without the RCRA permit formally required for storage beyond 89 days). Many liquid wastes may be sewered--others are sent to municipal solid waste landfills along with the firm's regular refuse collection. And some unknown amount may be poured into storm sewers or "dry" wells, or placed directly onto the land.

D. OFFSITE MANAGEMENT PRACTICES IN FACILITIES OUTSIDE OF ALAMEDA COUNTY

Appendix G presents details on the four major facilities listed below that received hazardous wastes from sizeable numbers of Alameda County generators in 1986. Both of the IT facilities closed in 1987.

- IT's Panoche facility (Solano County)
- IT's Vine Hill/Baker facility (Contra Costa County)
- Chemical Waste Management's Kettleman Hills facility (Kings County)
- Casmalia Resources' landfill (Santa Barbara County)

E. SMALL QUANTITY GENERATORS: PRACTICES AND SPECIAL NEEDS

Federal law (specifically, the 1984 Hazardous Waste and Solid Waste Management Amendments to the Resource Conservation and Recovery Act) defines small quantity generators as those who generate between 100 and 1,000 kilograms of hazardous waste per month. California laws and associated regulations apply to all those who generate hazardous waste regardless of the quantity.

Small quantity generators are a diverse and dispersed group. Many of them are small businesses without highly-trained personnel or sophisticated waste management practices. Typical small generators include auto repair shops, gas stations, dry cleaners, and printing and duplicating shops. Typical wastes include: contaminated solvents, paint sludges, plating solutions, photographic solutions, acids, and waste pesticides.

Some small generators in Alameda County may throw hazardous wastes into trash dumpsters or pour them down drains. Federal, state, and local laws now prohibit this type of disposal. Other small generators are now using alternative methods for managing their waste streams--methods that are more environmentally sound yet within economic reach. These practices, some down-sized versions of large-volume generator hazardous waste management methods, include:

Milk-Run Pickups. These pickups involve transport firms specializing in hazardous substances who make arrangements with a variety of companies in a single geographic area. The firm maps out a collection route; sends out a truck to pick up materials from the various companies; then delivers the waste to recycling, treatment, incineration, or landfill facilities as appropriate. The idea is to limit the number of trips to pick up waste materials, and, if possible, to consolidate similar wastes for more economical treatment and disposal. The Chemistry Department at U.C. Berkeley set up a milk run for solvents from labs at the University in early 1988, for example.

Pickups by Distributors. Chemical distribution companies sometimes pick up used solvents, etc., and then return them to the customer in a reclaimed form. This is analogous to bottling companies taking back empty bottles for cleaning and reuse.

Commingling. Similar types of oils and solvents can be picked up from a group of similar businesses and then "commingled" in a tank on the truck. The wastes are later reclaimed for reuse or sale. Segregation of waste streams at the source is important if this option is used since inappropriate mixing of wastes renders the whole mixture unusable.

Waste Exchanges. A waste exchange is a clearinghouse for information about wastes that may be reused by other companies: one company sells or gives away waste output to another company that then uses the waste as an input. The State of California operates a waste exchange and regularly publishes a Newsletter listing these wastes available for exchange.

Recycling. A wide variety of recycling options exist. The appropriateness of recycling depends on the type of waste produced, the degree and type of contamination, and the volume produced. Oil and solvents are the wastes most commonly recycled at present. Attractive new waste recycling technologies are rapidly entering the market.

Transfer/Collection Station. A transfer/collection station is a permanent structure designed for the collection of diverse waste streams; consolidation of compatible wastes; and transport for treatment, recycling, incineration, or secure landfill disposal as

appropriate. Wastes are transported to the facility by a milk-run pickup; or brought by the generators themselves. The stations are operated by personnel trained in hazardous waste management. Three transfer stations are currently operating near Alameda County: in Richmond, Contra Costa County; at the Romic facility in East Palo Alto, San Mateo County; and in San Jose, Santa Clara County.

Source Reduction. Small generators' waste streams can also be managed by making attempts to reduce either the volume or the toxicity of the waste at its source. This is accomplished by substituting less hazardous input materials or by changing the engineering of the process so that it results in a less hazardous product. Details about present and potential small generator source reduction practices in Alameda County are still minimal. Collecting more information will be an important part of implementing the Plan. Source reduction is the Plan's highest priority.

Special Needs of Small Generators

Because the wastes generated by these firms are diverse and the amounts generated per firm are small, owners and managers often have a difficult time disposing their wastes in an economical and environmentally-sound manner. Waste haulers are used to dealing with larger waste generators and may be resistant to accepting small amounts of waste because of excessive per-shipment handling and disposal costs.

Small quantity generators lack incentives to comply voluntarily with hazardous waste regulations. They may be faced with inadequate financial resources, inadequate and unaffordable insurance, inadequate technical expertise, and lack access to technical and regulatory information. Limited enforcement of existing regulations places those firms who want to comply and invest in proper waste disposal at a competitive disadvantage with firms that continue to dispose their hazardous wastes cheaply, though illegally.

This situation is likely to change as MOU inspection data, AB 2185/2187 (Waters Bill) data, AB685 data (Farr Bill) and RCRA reports all provide more information to Alameda County about who is using which substances and in what quantities. The high costs of disposal for small quantities remains a very significant disincentive. Disposal charges can be up to \$600 per drum; and expensive waste analyses are also often required before disposal companies will agree to take the wastes.

Educational and technical assistance programs are an alternative means for improving waste management practices, but reluctance by generators to participate often make it difficult for agencies to gather the information needed to design and implement useful programs. Trade associations and companies aggressively marketing transport/treatment/disposal services, especially for small generators, are sometimes in the position of providing information and advice to those mistrustful of government involvement.

The Department of Environmental Health in Alameda County has taken the lead role for small quantity generator programs so far. The department has a Memorandum of

Understanding with DHS and conducts inspections of large and small generators. About 1,500 generators had been inspected through the end of 1987. SQG programs are planned to continue at the county level or may develop out of AB 2185 programs and hazardous materials storage ordinances being implemented by city fire departments in Berkeley, Fremont, Newark, Pleasanton, San Leandro, Hayward, and Union City.

In 1987, the County Department of Environmental Health initiated a pilot small quantity generator program in cooperation with an Association of Bay Area Governments program for household hazardous wastes. Fifteen hundred letters were sent to very small quantity generators to inform them of their obligation to properly dispose the hazardous wastes they generate and invited them to participate in a multi-business pickup route with discount prices. The response to this program was low and was not followed up by the department.

F. MANAGEMENT OF HOUSEHOLD HAZARDOUS WASTES

A collection event at a temporary location is now the most common method for collecting household hazardous waste for disposal other than through the municipal trash collection system. Residents bring their waste to an advertised location and it is segregated and lab-packed in a 55-gallon drum for disposal in a Class I hazardous waste landfill. To the degree possible, some of the wastes are recycled, treated, or incinerated rather than landfilled.

The first collection event in Alameda County was held by the City of Oakland in September 1984. Since then, Hayward and the Tri-cities (Union City, Fremont, and Newark) have held repeated collections. Several other cities have sponsored programs. In 1987, ABAG co-sponsored a multi-city collection program in Alameda County. Table 4-2 shows the number of households participating and the number of drums collected at these various collections. The average amount collected from each household in the ABAG program was about a third of a drum (including containers and absorbent material).

These collections were advertised using press releases, flyers, direct mailings, and/or garbage can notices. Funding was provided by garbage collection fees or city general funds. Types of wastes collected included: paints, solvents, pesticides cleaners, acids/bases, and waste oil. A single sole-source contract for packaging and disposal services was signed with the Oakland Scavenger Company, who is the franchised garbage collection company for 11 of the 14 cities and two sanitary districts in Alameda County. Oakland Scavenger subcontracted with Chemical Waste Management. This arrangement was preferred by most of the cities involved and facilitated the use of garbage collection fees as a funding source.

Experience shows that repeated collections increase the awareness of homeowners and tenants in the area, and succeeding collections are likely to attract more participants

Table 4-2
Household Hazardous Waste Collection in Alameda County

Date	City	Number of Households in the Service Area	Number of Households Participating	Number of Drums Collected
9/84	Oakland	144,600	362	64
2/85	Albany	6,900	105	50
9/85	Tri-cities	74,100	185	84
9/85	Tri-cities	74,100	272	112
9/85	Hayward	36,950	400	127
9/86	Tri-cities	77,700	278	98
9/86	Tri-cities	77,700	320	123
10/86	Hayward	37,560	418	94
ABAG COLLECTIONS				
6/87	Oakland	146,859	383	
	Alameda	29,011	179	
	Piedmont	3,769	90	
	Other*	---	29	
	Total	179,639	681	330
7/87	Berkeley	45,422	726	
	Albany	6,932	203	
	Emeryville	2,725	4	
	Other	---	69	
	Total	55,079	1,002	335
5/87	Fremont	54,133	643	
	Union City	14,879	148	
	Newark	11,366	126	
	Other	---	69	
	Total	80,378	986	238
6/87	Livermore	18,828	194	
	Pleasanton	15,212	57	
	Dublin	5,709	30	
	Other	--	69	
				Continued

Table 4-2 (cont.) Household Hazardous Waste Collection in Alameda County				
	Total	39,749	350	
*Residents from cities not included in the group of participating cities were allowed to leave wastes, but were asked to pay a small user's fee to defray costs of disposal. Note: These are preliminary data from the ABAG collections. The volumes listed do not include the 91 cubic yards of latex paint that were collected. This paint was dried and disposed in a municipal landfill, as approved by the Regional Water Quality Control Board. Meiorin, Emy Chan. <u>Alameda County Pilot Collection Program for Small Quantity Generators of Hazardous Wastes.</u> Association of Bay Area Governments. 1988.				

and more wastes. Multi-city collections may be a continuing trend because collaborating cities can share advertising, planning, and site set-up costs. Cities, especially city fire departments, play an important role in organizing these collections and in developing refinements and innovations in the collection program process. Sanitary districts are likely to be important players in the unincorporated areas of the County, including Castro Valley Sanitary District and Oro Loma Sanitary District. Other cities in California have instituted permanent locations where household wastes are accepted on a continuous basis or by appointment. This option will be considered in Alameda County.

The definition of municipal waste in garbage collection franchises may be an important legal consideration if Alameda County or its cities increase their involvement in the household hazardous waste arena. Existing definitions can be interpreted in several ways and the implications for collection of hazardous wastes from households are still somewhat unclear.

Participation rates in household collections have been shown to vary by the size of community. Smaller communities tend to have higher participation rates (up to 1.5 percent), possibly due to:

- a smaller, more effective communication and notification network,
- shorter travel distances to a collection site, and
- a generally higher sense of community identity and cooperative spirit.

Large communities tend to have lower participation rates (down to 0.2 percent). Contributing factors might include:

- a more difficult and complex notification process,
- longer travel distances,
- a higher percentage of apartments and rental units, which are thought to have somewhat lower waste accumulation rates than owner-occupied homes.

These factors may become less important if a countywide program is implemented, and collections are well-publicized and extremely convenient.

The ABAG pilot project identified areas in the county thought to be appropriate geographical divisions for the multi-city collection program. Census tract density, expected participation rate, and predicted manageable size for one-day collections were taken into account when grouping the cities. The groups were chosen as follows:

- Area 1: Oakland, Alameda, and Piedmont
- Area 2: Berkeley, Albany, and Emeryville
- Area 3: Hayward and Castro Valley

- Area 4: Fremont, Union City, and Newark
- Area 5: Livermore, Pleasanton, and Dublin
- Area 6: San Leandro and San Lorenzo

Depending on the direction and emphasis of county and city programs for collecting and managing household hazardous waste, these may continue to be useful divisions for planning purposes. The jurisdictions of franchise agreements and sanitary districts would also be important logistical and funding considerations.

G. TRANSPORTATION OF HAZARDOUS WASTES

Alameda County still exports the major portion of hazardous waste generated within its boundaries. Thus, consideration of potential threats to public health and the environment from hazardous waste in transit is essential in any evaluation of the County's hazardous waste management practices.

A few major routes are used in the County. Various agencies are responsible for regulating and enforcing safe transport. Several problems exist, and possible solutions can be identified for current hazardous waste transport management in Alameda County.

BACKGROUND AND EXISTING REGULATIONS

Transportation of hazardous wastes is regulated by several federal, state, and local agencies. The federal government has enacted the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (Superfund). This legislation requires the U.S. Environmental Protection Agency and the federal Department of Transportation to establish regulations for handling and transportation of hazardous wastes. The regulations in part are set forth in the Code of Federal Regulations No. 40, Parts 260 and 263 and 40 CFR, Parts 171-179.

The federal regulations define and categorize hazardous wastes, establish a uniform manifest system, establish a uniform marking system on the transport vehicles, and mandate specific responsibilities to the states. The federal Department of Transportation has issued a Table of Hazardous Materials which is used as a basis for hazardous waste transport regulations by California agencies.

State and local laws and regulations on transport of hazardous wastes assign specific duties and responsibilities to the producers, transporters, and receivers of hazardous wastes. These regulations also define responsibilities of certain agencies for the regulation and monitoring of hazardous waste transport, and for emergency response to hazardous waste spills.

On state highways and freeways, the CHP and Caltrans have primary responsibility for the cleanup of hazardous waste spills. On surface streets in unincorporated areas, the local fire authority and the County Health Department's Emergency Response Van will respond to hazardous waste spills. Within cities, the local fire department has primary responsibility for the cleanup of hazardous waste spills. The County's Emergency Response Van may be called in to assist in the identification and cleanup of the waste.

EXISTING MODES AND ROUTES

Hazardous waste is transported in Alameda County along city and county streets, the state highways, interstate freeways, and on the major railroad lines. The primary routes for hazardous waste transport are Interstate I-580, I-680, and I-880. These freeways connect the major industrial areas of the County and provide the major routes for hazardous waste transport from outside the County. Large volumes of hazardous wastes pass through Alameda County from generators in Santa Clara County to facilities in Contra Costa, Solano and Kings Counties.

Three major railroad lines operate in Alameda County: Southern Pacific, Western Pacific, and Santa Fe. Southern Pacific (SPRR) is the major rail carrier of hazardous waste. Figure 4-1 shows these major routes for hazardous waste transport.

Some 80 percent of the manifested hazardous waste generated in Alameda County originates in the areas along I-880. It is likely that I-880 serves as the primary transport route for this part of the total county waste stream. Major receiving counties for this waste stream in 1986 (see data in Chapter 3) were Contra Costa, Kings, Los Angeles, San Mateo, and Solano Counties. There are currently no data available on the amount of hazardous waste transported through Alameda County from sources outside the county. However, because of the proximity of Santa Clara and Contra Costa Counties and the major transportation corridors connecting these areas through Alameda County, this amount is likely to be significant when compared with the locally-generated waste stream.

Preferred Routes. As previously discussed, Interstate 580, 680, and 880 are the most heavily-used routes for hazardous waste transport. Until waste minimization programs become effective these freeways will continue to be the major hazardous waste transport routes for Alameda County in the foreseeable future because of their importance to regional transportation. Since the freeways also serve as the major commuter traffic routes in the County, it is essential that a plan be developed to accommodate the needs of both commuter and hazardous waste transport along these roadways. It is also important that alternative management practices be instituted in all counties to reduce the amount of waste transported on highways.

COORDINATION WITH OTHER AGENCIES

Alameda County Health Department. In response to the problem of hazardous waste spills in the County, the Health Department has purchased a special Emergency

Figure 4-1. Hazardous Waste Spills, 1985-1987

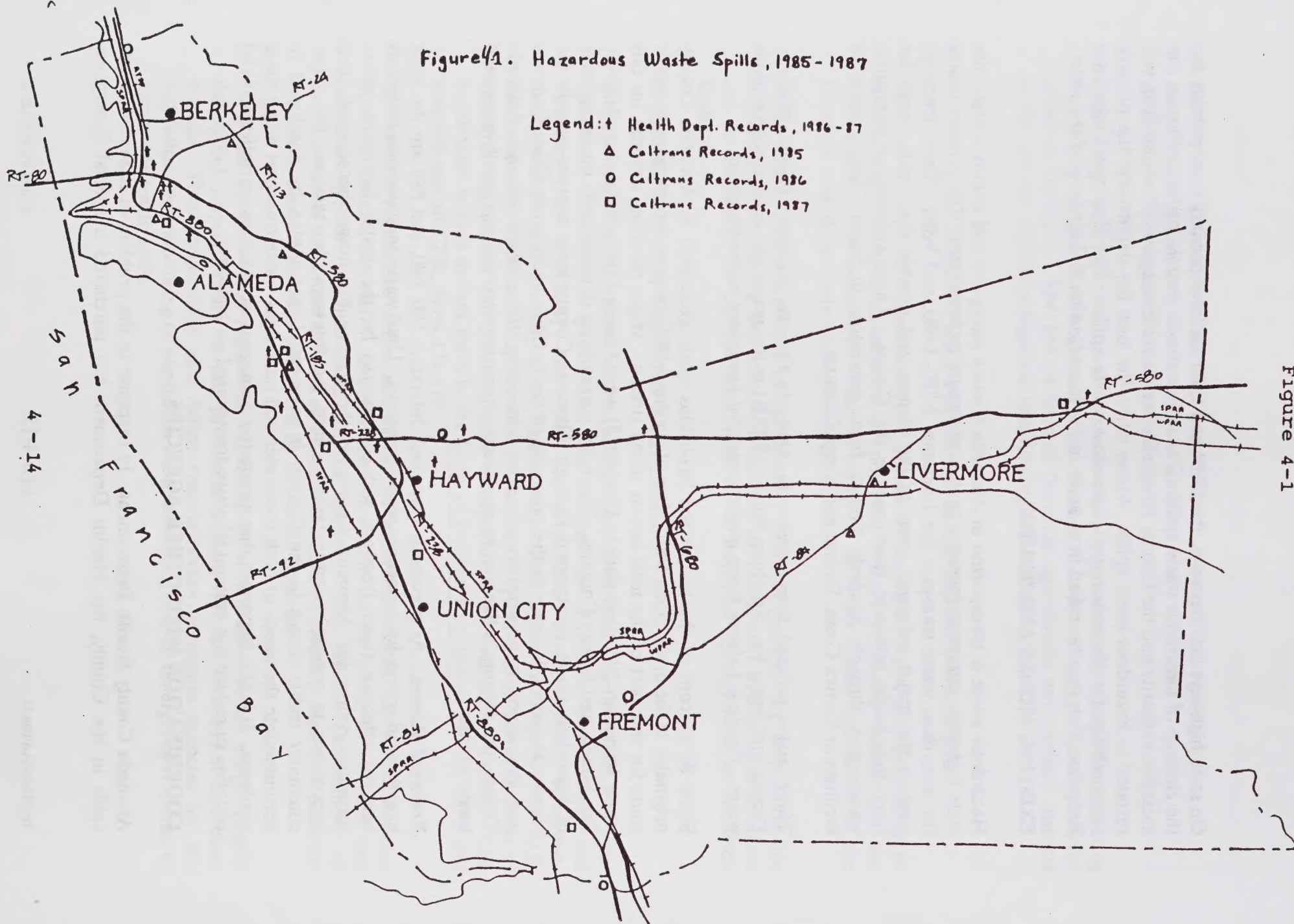


Figure 4-1

Response Van and equipped it with state-of-the-art instrumentation for providing preliminary identification of materials at spill sites and communication to other authorities for scene management and clean-up. The Emergency Response Van also maintains a log of spill data, which includes information on dates, location, and types of material. Review of these data for the period of June 1986 through December 1987 indicates that approximately 75 percent of the hazardous waste spills reported on local streets in Alameda County occurred along the I-880 corridor, with most of the remaining spills occurring along the I-580 corridor. These locations are shown on Figure 4-1.

Highway Patrol and Caltrans. The California Highway Patrol (CHP) maintains an ongoing program to inspect trucks on state highways to see that they are displaying proper placards and conforming to the other state regulations regarding transport of hazardous waste. Trucks are inspected at the truck scales on I-580, 680, and 880 for proper manifest records, special containment features, and compliance with other legal requirements.

Hazardous waste spill data for the state highways in Alameda County were collected from the CHP and Caltrans for 1985 through 1987. The data plotted on Figure 4-1 show a pattern of incidents on I-880. It should be noted that the data presented in Figure 4-1 do not include spills of all hazardous materials recorded in the county; only hazardous waste spills have been included.

4. STATE DEPARTMENT OF HEALTH SERVICES (DHHS)

DHHS is responsible for enforcing certain state hazardous waste control laws and (through delegation of a number of related responsibilities) much of the federal hazardous waste law in the Hazardous Conservation and Recovery Act (HCRRA). DHHS is presently attempting to comply for disposition of hazardous materials under federal law (particularly sections of the Hazardous and Solid Waste Amendments of 1984 (HSWA)). These state and federal laws provide for another "multi-pronged" regulation of all aspects of hazardous waste: generation, treatment, storage, transportation, and ultimate disposal. They also provide for extensive technical and financial assistance efforts.

Despite these ambitious regulatory goals, state law enforcement and supporting personnel in this have prevented DHHS from implementing its broad mandate fully. In Alameda County, for example, DHHS cannot monitor and control only the few state statute-defined treatment, storage and disposal (TSD) facilities but is restricted to only the manifest system of 1980, plus up to 1984 DHHS and personnel waste generators. The state requires only 13 facilities in Alameda County. DHHS is able to inspect state listed facilities only once every 12 to 18 months. DHHS cannot meet the regulatory waste handling.

CHAPTER 5

CURRENT HAZARDOUS WASTE MANAGEMENT PROGRAMS AND COORDINATION ACTIVITIES

This chapter describes the most important existing agency programs which address hazardous materials and wastes. Chapter 10 of this Plan describes additional efforts to support Plan goals and implementation strategies.

Three primary relationships exist between the Hazardous Waste Management Plan and these toxics management programs:

- Agency data on hazardous waste generators can help the Waste Management Authority (and others) more accurately assess local hazardous waste streams.
- Information on the Plan's goals, policies, and specific programs (e.g., recycling) can be distributed to hazardous waste generators through existing agency programs.
- Source reduction assistance program can be carried out through some of these ongoing inspection and regulatory efforts.

A. STATE DEPARTMENT OF HEALTH SERVICES (DHS)

DHS is responsible for implementing both the state Hazardous Waste Control Law and (through delegation of a number of related responsibilities) much of the federal hazardous waste laws in the Resource Conservation and Recovery Act (RCRA). DHS is presently attempting to qualify for delegation of additional responsibilities under federal law (especially elements of the Hazardous and Solid Waste Amendments of 1984 [HSWA]). These state and federal laws provide for so-called "cradle-to-grave" regulation of all aspects of hazardous wastes: generation, treatment, storage, transportation, and ultimate disposal. They also provide for extensive technical and financial assistance efforts.

Despite these ambitious legislative goals, resource constraints and competing commitments to date have prevented DHS from implementing its broad mandates fully, in Alameda County or statewide. DHS actually inspects and permits only the few major federally-defined Treatment, Storage and Disposal (TSD) facilities out of over 700 which used the manifest system in 1986, plus an estimated 7,000 small hazardous waste generators. The state inspects only 13 facilities in Alameda County. DHS is able to inspect even these few facilities only once every 12 to 24 months. DHS also receives the hazardous waste manifests.

As a practical alternative to noncompliance, DHS has executed memoranda of understanding (MOUs) with the health departments of 17 counties, 3 cities, and the Los Angeles Sanitation Districts. These MOUs establish hazardous waste generator inspection and permit programs for all but the few federal TSD facilities. Alameda County has signed such an MOU, which is implemented by the County Department of Environmental Health; this program is described below.

B. COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH (DEH)

Alameda County has assigned most county authority over hazardous materials and hazardous wastes to its DEH, adding new statutory and programmatic goals over time. Most recently, on October 23, 1987, the Board of Supervisors assigned a 10-point multi-year "Hazardous Materials/Waste Management Program," to a separate Hazardous Materials Management Division of DEH. This program includes:

HAZARDOUS WASTE GENERATOR INSPECTIONS (MOU)

This effort will implement the county's MOU with the state Department of Health Services. Local regulation is being phased in, as DEH identifies and develops the resources and expertise to regulate them effectively. Through the end of 1987, roughly 1,500 generators had actually been inspected, out of DEH's estimated total of 3,000.¹ Unlike a number of other DEH programs, the generator inspection program operates countywide, including not only the unincorporated areas but also in all the cities.

HAZARDOUS WASTE HAULER INSPECTIONS

Hazardous waste haulers are regulated primarily by the Federal Department of Transportation, but local agencies retain limited authority over notice, timing, and routing. DEH will implement a program to inspect waste haulers to assure their compliance with permit, manifest, and safety requirements.

UNDERGROUND STORAGE TANK (UST) REGULATION

Two pieces of state legislation passed in 1983 require counties to regulate the underground storage of hazardous materials and wastes--which includes fuel storage at gasoline service stations and fleet yards, some pesticide storage, and other underground storage of such materials. Cities were given the opportunity to assume implementation through adoption of municipal ordinances, and could "grandfather" pre-existing programs with certain conforming amendments. The Cortese Bill (AB 2013) required UST owners to register their tanks by July 1, 1984. The Sher Bill (AB 1362) established technical standards for the construction and installation of UST, including

¹Reasons for the apparent discrepancy between this estimate and the much larger number (7,000) from the No Survey Method (See Chapter 3) are still being explored.

requirements that all UST installed after January 1, 1984 provide double containment (e.g., double-walled tanks) and a method to monitor the UST for leaks. Pre-1984 UST were required to install monitoring systems.

The county's UST program (implemented by DEH) does not operate countywide; instead, seven cities took their opportunity to establish city programs (Berkeley, Fremont, Hayward, Newark, Pleasanton, San Leandro, and Union City). DEH estimates that 3,000 USTs are located in the areas covered by its county program (roughly half of the countywide UST total); 1,001 had been inspected through the end of 1987.

These inspections and monitoring efforts have identified hundreds of contaminated sites within Alameda County. DEH and the fire departments have taken responsibility for removal of gross contamination (floating gasoline, piles of leaky drums, etc.), but have deferred decisions about final cleanup to SWRCB and its RWQCBs, DHS, and the federal EPA.

ABANDONED HAZARDOUS WASTE SITES

Over time, DEH has been directed to participate in the identification, classification, and cleanup of abandoned hazardous waste sites, under state and federal law (e.g., Superfund). A total of 22 remedial action sites, and many smaller leaks, have already been identified in Alameda County.

EMERGENCY RESPONSE

DEH operates a hazardous materials emergency response unit countywide. This unit was acquired with grant support from the state.

DEH is also the county's "Administering Agency" under the Waters Bill (AB 2185/2187). One major responsibility of each Administering Agency is the preparation of an "Area Plan" for cooperative emergency response to hazardous materials/wastes emergencies throughout its geographic area. Area Plans were due at the end of 1987, with triennial updates to follow. The Alameda County plan also coordinates with plans prepared to cover the six cities that chose to "self designate" to administer the Waters Bill within their jurisdictions (the same cities implementing UST laws, less San Leandro).

HAZARDOUS MATERIALS/WASTE DATA

DEH's many hazmat program elements collect and store vast amounts of data. The Division is now designing and implementing a computerized data system intended to store and manage all this information. This process will take several more years.

RECYCLING, WASTE RECOVERY, AND WASTE EXCHANGE

DEH's activities and plans in this area are described in Chapter 4, as regards small quantity generators and household hazardous wastes. In addition, the Division's long term plans call for an Alameda County Waste Exchange Program. This effort is modelled on DHS's California Waste Exchange, through which waste generators can advertise offering their hazardous and other wastes to others for recycling or reuse.

HAZARDOUS MATERIAL/WASTE DISCLOSURE (WATERS BILL)

This element is based on the "Business Plan" provisions of the statewide Waters Bill, which is administered by DEH (plus the six self-designated cities) as the second major component of that law. Every business facility that "handles" more than threshold quantities of hazardous materials (hazmat) must prepare a Business Plan that contains a detailed hazmat inventory, basic facility ownership and operational information, a detailed site map showing the locations of hazmat storage and emergency response equipment, and an onsite emergency response plan that includes training for employees. The 1986 amendments added an additional requirement that each Business Plan also estimate total annual throughput of each hazardous waste--a very useful data source for Tanner planning. Business Plans were to be submitted to the local Administering Agency no later than January 1, 1988. Each Administering Agency must maintain public access to the Business Plans (right-to-know element), and must operate a permit and inspection program to assure business compliance.

As of the end of 1987, DEH had inspected 130 of the 2,000 hazmat-using businesses it estimates to be located within the areas it serves directly. Many of these facilities are the same ones covered by the UST and MOU programs.

This program element will also be expanded to include the 1986 La Follette Bill (AB 3777/1059), which requires Waters Bill Administering Agencies to enforce greatly expanded reporting and planning requirements for a narrower set of 406 "acutely hazardous materials." Businesses that handle above threshold quantities of "AHMs" must prepare detailed Risk Management and Prevention Programs for their facilities, designed to identify and prevent potential AHM releases that would endanger the community. While Administering Agencies have the option of requiring RMPPs at existing facilities, they must require an RMPP at any new or modified facility before that facility begins operations, or must issue a written finding that no RMPP is necessary. While the La Follette Bill is not focused directly on hazardous wastes, those wastes that contain more than one percent (1%) AHMs will still be considered under this new program. No reliable estimate of AHM-handling facilities in Alameda County yet exists.

SUPPORT SERVICES FOR LAND USE PLANNING AND DEVELOPMENT ACTIVITIES

DEH receives frequent inquiries from development interests relating to contaminated sites. DEH provides technical assistance to development interests and local land use planning agencies upon request.

OCCUPATIONAL SAFETY AND HEALTH INFORMATION REGARDING HAZARDOUS WASTE MATERIALS/WASTE

DHS will continue as an information source.

C. SANITARY DISTRICTS AND PUBLICLY-OWNED TREATMENT WORKS

The federal Clean Water Act and the state Porter-Cologne Water Quality Control Act regulate all discharges to the state's waters. Sewage and wastewater treatment plants operated by cities and special districts must comply with these statutes and associated regulations. These same federal and state laws provide authority (some mandatory, some optional) for these agencies to regulate discharges into their sewers. Each of the seven municipal or district plants in Alameda County implements an Industrial Pretreatment Program that requires certain industrial, commercial, and government facilities to pretreat sewerage wastes to neutralize acids and bases, and remove heavy metals or toxics. All include frequent onsite inspections of these firms. The seven districts are:

- Dublin-San Ramon Sanitary District
- East Bay Municipal Utility District (East Bay MUD)
- Hayward
- Livermore
- Oro Loma Sanitary District [which also handles waste from the Castro Valley Sanitary District]
- San Leandro
- Union Sanitary District

These programs can be important sources of information for the hazardous waste planning process. In addition, the POTWs are important sources of expertise in dealing with a range of hazardous waste issues. Finally, the relative intensity of these

programs indicates that efforts to assure effective coordination or integration with other hazardous waste programs could be important to minimizing unnecessary overlaps or gaps in coverage.

D. CITIES

Each of the 14 incorporated cities in Alameda County has accepted for its own implementation a unique subset of the legal authority over hazardous materials and wastes available to them. Rather than 14 repetitive listings, this subsection describes briefly the general authority available.

FIRE CODE

Each city adopts a municipal fire code. Generally, this code incorporates most or all of the Uniform Fire Code (UFC), often with amendments to particular articles or sections. The UFC contains a variety of provisions dealing with the storage and handling of classes of potentially dangerous materials. The impending 1988 Edition of the UFC will present extensive amendments to Article 80, which addresses hazardous materials, including hazardous wastes. Cities will have the option of amending their municipal fire codes to adopt the newly-revised Article 80--many of these new provisions parallel requirements in the Waters and La Follette Bills (the UFC covers other states in addition to California).

HAZARDOUS MATERIALS STORAGE ORDINANCES (HMSOs)

In 1983, seven cities in Alameda County (Berkeley, Fremont, Hayward, Newark, Pleasanton, San Leandro, and Union City) adopted HMSOs, based on a model developed in neighboring Santa Clara County. These ordinances address above ground and underground storage of hazardous materials and hazardous wastes. All the HMSOs are being implemented by fire departments, except that Berkeley assigns this role to the Division of Environmental Health of the city Department of Health and Human Services.

UNDERGROUND STORAGE TANK REGULATION

As mentioned above, the seven cities with HMSOs also implement the state UST laws, as extensions of their HMSO programs.

WATERS AND LA FOLLETTE BILLS

All the cities with HMSOs except San Leandro also self-designated to implement the Waters Bill; San Leandro left this new program to the county. These six cities therefore have inherited full La Follette Bill responsibilities as well.

HOUSEHOLD HAZARDOUS WASTES

Chapter 4 describes efforts by cities and special districts to address household hazardous wastes. This authority follows clearly from local control over solid waste. Cities also receive additional authority from recent state legislation: AB 1809 (Tanner, 1986) and AB 2448 (Eastin, 1987).

E. OTHER HAZARDOUS MATERIALS AND WASTES PROGRAMS

In addition to the programs just described, a wide variety of other local, regional, state and federal programs regulate other aspects of hazardous materials and wastes within the geographic confines of Alameda County. Many include reporting, inspection and/or permit requirements that could be coordinated or integrated with the hazardous waste programs just described, including:

- Protection of drinking water, and water generally. The state Porter-Cologne Water Quality Act assigns a broad range of water protection responsibilities to the State Water Resources Control Board, and to the Regional Water Quality Control Boards (RWQCB--in Alameda County the Bay Area RWQCB). These include oversight of cleanup of leaks and spills of hazardous materials and hazardous wastes; however, resource constraints have severely restricted RWQCB's accomplishments in this area.
- Prevention of leaks from toxic pits, and from disposal sites for solid and hazardous wastes. The Bay Area RWQCB is primarily responsible for this program in Alameda County under AB 3566 (Katz). As surface impoundments are closed, this may increase the need for new hazardous waste management facilities.
- Protection of air quality, including regulation of toxic air emissions. The Bay Area Air Quality Management District implements a variety of federal and state laws within Alameda County. Any new hazardous waste management facilities would be subject to BAAQMD regulation of air emissions. BAAQMD's air toxics program includes a health risk assessment for new and modified sources, an inventory of emissions in the Bay Area, an ambient monitoring network, and development of toxic air contaminant regulations (in conjunction with Air Resources Board).
- Regulation of infectious wastes. County Health is responsible for this program.
- Regulation of pesticides and "restricted materials." The County Agriculture Commissioner is responsible.

- Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 creates the "Emergency Planning and Community Right-to-Know Act," which creates a variety of toxics reporting requirements similar to state laws. Title III has required the creation of a statewide commission, and local planning districts. The planning district which includes Alameda County is from Santa Cruz to the Oregon border.
- Other federal toxics and hazardous materials programs. Implemented by the U.S. Environmental Protection Agency or delegated to state agencies, these laws are expanding steadily.
- Regulation of Waste Haulers. This is primarily a federal function, but state DHS establishes certification requirements. Transportation enforcement agencies can enforce: California Highway Patrol on federal and state highways and county roads, county sheriff on roads in unincorporated areas, city police departments in incorporated areas.
- Local Emergency Plans. The County Office of Emergency Services is responsible for the preparation of the County Multi-hazard Functional Plan, which plans for response to various types of emergencies, including the accidental release of hazardous materials and wastes. Examples of procedures covered in the plan are warning the public, communication, rescue, and evacuation. Each city in the County has a comparable plan using a similar format to aid in coordination.

F. COORDINATION WITH COUNTY SOLID WASTE PROGRAMS

Prior to the passage of AB 2948, county hazardous waste management planning was authorized under state statutes mandating every county to prepare and to update a County Solid Waste Management Plan on a triennial basis. The portion of the Plan dealing with hazardous waste disposal was required to be reviewed by the California Department of Health Services for conformity with state hazardous waste standards. DHS recommended that the discussion of hazardous wastes in County Plans be prepared as a separate element rather than appearing in several of the required elements of the Solid Waste Management Plan.

The 1987 Alameda County Solid Waste Management Plan contains a separate Hazardous Waste Element, prepared after the passage of AB 2948 but before the development of the DHS Guidelines for the preparation of County Hazardous Waste Management Plans. This element represents "an interim approach to management of hazardous waste in Alameda County that will be followed by a detailed County Hazardous Waste Management Plan." The present County Hazardous Waste Management Plan should be viewed as superseding any relevant information or programs contained in the Alameda County Solid Waste Management Plan. There are

no gaps or problems in using the Hazardous Waste Management Plan to replace the Hazardous Waste Element of the Solid Waste Management Plan.

Issues of household hazardous waste are included in the relevant section of the Hazardous Waste Management Plan, which will supersede all references to household hazardous wastes in the 1987 update of Alameda County's Solid Waste Management Plan. Future updates of the Solid Waste Management Plan will incorporate by reference plans and programs in the Hazardous Waste Management Plan dealing with household hazardous wastes.

The Oakland Scavenger Company (OSC) employs a chemist at its Davis Street Transfer Station to analyze suspicious materials in the municipal waste stream to prevent hazardous wastes from being commingled with the municipal waste stream. The OSC chemist is available to the Durham Road Landfill to provide the same service. A chemist is also employed at the SWETS Transfer Station to analyze San Francisco wastes prior to its being hauled to OSC's Altamont Landfill.

A. ECONOMIC GROWTH

The nature, type, and amount of growth in Alameda County's economy during the next twenty years will affect hazardous waste management planning and action in the County. For example, the biotechnology industry has expanded rapidly in Alameda County in recent years. This may affect the type and amount of hazardous waste generated. New industry may also find ways to minimize waste as a way of reducing expenses.

The mix of industry types as well as the mix of new versus old will also influence the hazardous waste system here. There should be important lessons there is greater opportunity for new firms or companies to experiment in setting new or adapting improvements in their hazardous waste practices. Such improvements may come from new scientific data, new technologies and equipment, technical improvements in waste waste generation, this may be more difficult or costly in older facilities. So much new firms may be required to adapt even more aggressive waste reduction measures, the likelihood of receiving their best business permits.

B. HAZARDOUS WASTE MANAGEMENT CHALLENGES

County hazardous waste management will require attention over the next twenty years. Greater attention to new technologies, equipment, and personnel training will be required to meet the challenges of hazardous waste management. The County will need to continue to improve its hazardous waste management system, and to ensure that the system is able to handle the increasing volume of hazardous waste generated in the County.

SECTION III
FUTURE HAZARDOUS WASTE MANAGEMENT
ISSUES AND ANALYSIS

CHAPTER 6
MAJOR FACTORS AFFECTING FUTURE
HAZARDOUS WASTE MANAGEMENT

In this chapter, the major issues and trends are addressed by three main questions:

- (1) What will be the pattern and extent of Alameda County's growth and development?
- (2) How will future hazardous waste management improve over present practices?
- (3) What will be the demand for new offsite facilities to manage hazardous wastes?

A. ECONOMIC GROWTH

The extent, type, and manner in which Alameda County's economy changes over the next dozen years will affect hazardous waste management problems and needs in the County. For example, the biotechnical industry has expanded rapidly in Alameda County in recent years. This may affect the type and amount of hazardous waste generated. New industry may also find ways to minimize waste as a way of reducing expenses.

The mix of industry types as well as the mix of new versus old will also influence the hazardous waste system here. These mixes are important because there is greater opportunity for new firms--or significant expansions at existing ones--to adopt improvements in their hazardous waste practices. Such improvements may stem from two sources: first, new construction can incorporate technical improvements to reduce waste generation; this may be more difficult or costly at older facilities. Second, new firms may be required to adopt even more aggressive waste reduction measures as a condition of receiving their local business permits.

B. HAZARDOUS WASTE MANAGEMENT CHANGES

Future hazardous waste management will depart radically from the way hazardous wastes were handled in the past. Greater knowledge of how to manage hazardous materials and wastes, greater regulatory scrutiny, and increasingly strong economic incentives should significantly reduce future contamination. Yet, it is likely that

additional contaminated sites will be discovered, adding to the volume of wastes requiring treatment and disposal. With the emergence of new and more effective technologies, SARA's (Superfund Amendments and Reauthorization Act of 1986) demand for site remediation may be especially suited to onsite cleanup. Here, bioremediation and mobile incineration may prove to be quite effective, thereby reducing the impact of contaminated soils and perhaps other types of wastes on offsite hazardous waste management facilities in Alameda County.

As noted earlier (particularly in Chapters 1 and 2), public attitudes play a critical role. A gradual reduction in the level of fear about toxics, often termed "chemophobia," can be expected as a result of greater public education and understanding about hazardous materials and waste management. Greater public awareness of such issues also leads to demands for new approaches to toxics management. These include public pressures to significantly reduce (or even eliminate) the use of toxic substances and reduction of other wastes at the source--thereby significantly reducing, and for some potentially eliminating, the need for new offsite treatment, incineration, and residuals disposal facilities.

Future hazardous waste management may also be affected by new regulatory developments. Some will arise in response to the emergence of new technologies, or approaches such as seen already in mobile treatment. Other regulatory changes will take place as a result of greater awareness of the extent of problems (as in the growth of the federal Superfund from \$1.8 billion in 1980 to \$9 billion in 1986), or in response to heightened public pressures. A trend toward even more stringent regulations in the future is expected. On the other hand, the ability of government agencies to more carefully craft regulatory approaches to reduce their burden, while improving the level of protection is also expected to increase. For Transportable Treatment Units (TTUs), EPA has suggested relaxing somewhat the rigid permitting requirements that are imposed on large treatment and disposal facilities, in order to encourage greater use of TTUs.

C. DEMAND FOR NEW OFFSITE FACILITIES

Currently, the largest proportion of hazardous wastes generated in Alameda County are disposed at offsite land disposal facilities. What alternatives to land disposal are needed? Where can and should these facilities be located? For whom shall they be built? By whom?

These questions are central to this Plan, and are addressed in subsequent chapters on waste stream projections, facility needs assessment, and siting criteria. However, future demand for new offsite facilities depends on the type and size of firm being addressed. The following forces influencing different kinds of firms and their responses, in general terms,

Large companies, especially those experienced in chemicals handling and production, are driven by economic goals, liability, concerns, and, to a lesser extent, regulatory pressures. In Alameda County, about 10 firms account for 25 percent of the total waste stream; another 60 or so firms account for another large portion of all hazardous wastes. Together this group of largest generators account for 50 to 60 percent of all manifested wastes. Rapidly rising costs for hazardous waste management, especially offsite; great potential liabilities for cleanup of disposal sites; and regulatory demands for waste minimization are pushing these firms rapidly to source reduction and onsite treatment. This trend appears to be well underway. Companies may also feel public pressure to continue waste reduction. A positive corporate image is a critical asset. These firms, while they were once major waste generators, and accounted for the largest volumes of manifested wastes, are moving away from the need to use offsite facilities making projections of the future based primarily on 1980's manifest data inaccurate.

Many medium-sized companies have also begun to feel the pressures of economics, liability, and regulation. In Alameda County 700 medium size generators account for the remaining 40 to 50 percent of the wastes included in the manifest system data. Their waste management costs are growing rapidly. These firms may change and adapt to these pressures somewhat more slowly than their larger colleagues. They may require government assistance. Their demands for offsite hazardous waste management facilities are not easily predicted. In the short run, these demands are likely to increase as land disposal is phased out; but they should decline as these firms, too, adapt and are able to implement greater source reduction and onsite treatment.

Smaller firms will have the greatest difficulty responding to the new set of pressures. Many appear to operate outside of the hazardous waste management system today--possibly out of ignorance of their need or of their ability to comply. Instead, these firms are driven by economic forces; liabilities far less of a factor compared to large firms. They are far less likely to practice onsite treatment. In Alameda County nearly 7,000 small firms not using the manifest system are estimated to account for about one-third of total wastes, and some 22 percent of hazardous wastes when waste oils and recycled wastes are excluded. In the near term, these firms may add to the demand for offsite facilities, as their hazardous wastes enter the system for the first time. Their total contribution to the county's waste stream appears to be small.

Smaller firms often lack the experience with chemicals and waste management to institute a great deal of source reduction. But they may be encouraged by good will and a desire to achieve a healthy environment, provision of information or training, or banks conditioning loans or insurance companies offering premium discounts for complying with waste audits.

A household hazardous wastes education or collection effort may divert some of these materials from Class III refuse disposal sites to recycling, treatment (or Class I) facilities.

The situation reflects pressures to reduce the demand for offsite hazardous waste management facilities, with a much smaller counter-demand for increased handling of hazardous wastes offsite. The former pressures discourage development of those offsite facilities needed to manage the wastes not eliminated by source reduction or managed onsite by larger generators, plus those of smaller generators and households.

The problem is potentially very serious: many land disposal deadlines may be extended if sufficient alternative capacity is not available. Market demands will determine capacity--and be defined by its availability (or its absence). The solution is to disaggregate the waste stream analysis and, especially, the implementation strategy. The priority called for in the plan's policies is on source reduction, then onsite recycling and treatment, especially by larger generators. These priorities may apply differently to different waste streams.

Facility development is likely to require a greater public sector role. This could take three forms. First, because of the uncertainty surrounding the demand for offsite facilities by large generators and the trend towards greater onsite management, some offsite facilities may be sized to meet regional needs. This will be facilitated by inter-county cooperation on siting large offsite facilities. This approach reflects an understanding of economic realities affecting the future of the county's waste stream and the sizing of offsite facilities to meet economies of scale, with a recognition that it necessitates greater transportation distances, as one or more facilities is likely to be more removed from the county's sources of hazardous waste generation. Secondly, other facilities--transfer stations, for example, and stabilization units, plus transportable technologies--will be sized and sited primarily to meet local needs. Third, the possibility of public sector involvement in meeting the offsite facility needs of small generators and households should be considered. This may also be true in the case of residuals repositories for all generators.

CHAPTER 7

HAZARDOUS WASTE GENERATION PROJECTIONS

General economic trends will influence overall patterns of industrial and commercial development. These changes, in combination with source reduction, recycling, and with use of new onsite waste treatment technologies--by existing firms and by new firms--will determine the volumes and types of hazardous wastes to be generated in Alameda County in 2000.

A. FUTURE ECONOMIC DEVELOPMENT

ABAG, for its Bay Area Regional Hazardous Waste Management Plan, has carried out a series of analyses regarding future economic development. These analyses included such topics as:

- General economic trends
- Industrial growth
- New product
- Local land use

A complete description of the methodology developed by ABAG can be found in the technical appendices of the Bay Area Regional Hazardous Waste Management Plan. Table 7-1 summarizes these growth projections for Alameda County. The highest growth is in services, construction, finance, insurance, real estate, and wholesale trade. Much of this growth, is expected to be in the I-680/I-580 corridor.

Of greatest importance to projections of future hazardous waste generation is the estimate of a 46 percent growth in the manufacturing sector (2.72 percent compounded annually).

B. ALTERNATIVE WASTE STREAM PROJECTIONS

In order to determine Alameda County's future waste management needs, three projections for waste generation were calculated: baseline, moderate and aggressive. Each of these corresponds to a different level of effort to minimize waste at the generating source.

Baseline estimates assume no future increased source reduction effort. They project county development due solely to economic factors.

Moderate estimates include the assumption that modest waste minimization efforts will be in effect. Essentially, this source reduction alternative is driven by market forces

**Table 7-1
Business Sector and Population Growth^a
1986-2000
Alameda County**

	Overall Percent Increase	Annually Compounded Growth %
Services	109.12%	5.41%
Construction	77.25%	4.17%
Finance, Insurance, and Real Estate	64.38%	3.61%
Wholesale Trade	60.24%	3.43%
Manufacturing	45.61%	2.72%
Retail Trade	43.91%	2.63%
Transportation, Communication, and Utilities	37.78%	2.32%
Government	18.17%	1.20%
Residences	10.46%	0.71%
Agricultural and Mining	-15.74%	-1.22%
Unclassified	0.00%	0.00%
^a Derived from ABAG projection data--developed by Ray Brady.		

(costs of hazardous waste treatment and disposal), as the most important determinant of companies' decisions, without any special efforts by local governments or the state. These estimates reduce baseline waste generation rates in 2000 according to predictions of what low-level source reduction could achieve.

Aggressive projections estimate hazardous waste generation in 2000 assuming onsite waste minimization will be maximized at both existing and new firms. For these projections, baseline generation estimates were reduced using estimated maximum values for waste minimization potential.

All these projections assume only onsite source reduction and waste minimization; they do not include any further reductions in waste volumes that can be achieved by use of onsite waste treatment technologies or transportable treatment systems.

Although several factors can influence the county waste stream, both moderate and aggressive projections apply reductions to the strictly economically-driven baseline estimates. Other factors, such as regulatory changes, could have significant impact on the projected waste stream. These factors are very difficult to predict and even more difficult to quantify in terms of their effect on waste generation. Therefore, the projections presented here are subject to the effects of regulatory changes, unforeseen overall economic trends, and other potential influences not included in the baseline development data for hazardous waste generation.

It is important to clarify what is meant by "source reduction" here. This term applies to waste minimization techniques which actually reduce the amount of hazardous wastes requiring treatment. These techniques include various "housekeeping" procedures such as reducing spillage; purchasing hazardous materials in bulk containers to eliminate generation of many contaminated, empty packages; and extending the use of solvents. "Source reduction" as used in this chapter does not include onsite treatment.

Another important consideration for this chapter is the effect of industry participation on the projected waste stream. The baseline projection assumes no increased source reduction activity in any industry. Moderate and aggressive projections assume 100 percent industry participation at each level of average effort. With less involvement, these projections would have to be adjusted accordingly. Also, the projections assume that there is potential for increased source reduction in all industries. This is not true in every case. Contact with several small businesses indicates that in order to reduce hazardous materials and disposal costs, source reduction techniques are already being used "as fully as possible." Projections in this chapter do not take this into account.

BASELINE PROJECTIONS

Table 7-2 shows ABAG's calculations of growth in Alameda County hazardous waste generation by industry categories, without any source reduction. Note the large growth in:

Table 7-2
Baseline Waste Growth By Industry^{a,b}
1986-2000
Alameda County

Business Sector	General SIC Code	Industry Group	Percent Waste Growth	Annually Compounded Growth Percent
Agriculture	700	Agriculture Services	-16.13	-1.25
	800	Forestry	-15.61	-1.20
Construction	1500	General Building Contractors	77.25	4.17
	1600	Other Construction	77.09	4.17
	1700	Special Trade Construction	77.27	4.17
Manufacturing	2000	Food and Kindred Production	2.75	0.19
	2500	Furniture and Fixtures	8.45	0.58
	2600	Paper and Allied Products	8.44	0.58
	2700	Printing and Publishing	100.22	5.08
	2800	Chemicals and Allied Products	57.76	3.31
	2900	Petroleum Refining Industries	48.70	2.87
	3000	Rubber and Misc. Plastic Products	29.59	1.87
	3200	Stone, Clay, Glass, and Concrete Products	22.42	1.46
	3300	Primary Metal Industries	27.87	1.77
	3400	Fabricated Metal Products	10.14	0.69
	3500	Nonelectrical Machinery	171.51	7.40
	3600	Electrical & Electronic Equipment	270.55	9.81
	3700	Transportation Equipment	23.45	1.52
	3800	Instrumentation and Related Products	211.44	8.45
	3900	Miscellaneous Manufacturing	212.53	8.48
Transportation ^c	4000		75.90	4.12
	4100	Local and Interurban Transport	75.90	4.12
	4200	Trucking and Warehousing	43.51	2.61
	4400	Water Transportation	75.91	4.12
	4500	Air Transportation	75.92	4.12
	4700	Transportation Services	75.87	4.12
	4800	Communication	110.88	5.47
Wholesale Trade	4900	Electrical, Gas, and Sanitary Services	24.13	1.56
	5000	Durable Goods	60.24	3.43
	5100	Nondurable Goods	60.25	3.43
Retail Trade	5200	Building Materials	43.91	2.63
	5300	General Merchandise Stores	44.06	2.64
	5400	Food Stores	43.97	2.64
	5500	Automotive Dealers and Service Stations	43.91	2.63
	5600	Apparel and Accessory Stores	43.94	2.64
Finance, Insurance and Real Estate Services	5700	Furniture Stores	43.18	2.60
	6100	Credit Agencies	69.83	3.86
	6400	Insurance Agents, Brokers, and Services	64.29	3.61
	6500	Real Estate	63.62	3.58
	7200	Personal Services	14.19	0.95
	7300	Business Services	134.99	6.29
	7500	Auto Repair Services	14.19	0.95
	7600	Miscellaneous Repair Services	13.90	0.93
	7900	Amusement and Recreation	47.28	2.80
	8000	Health Services	22.61	1.47
	8200	Educational Services	40.46	2.46
	8900	Miscellaneous Services	135.05	6.29

Continued

**Table 7-2 (Cont.)
Baseline Waste Growth By Industry^{a,b}
1986-2000
Alameda County**

Public Administration	9100	Executive, Legislative, General Government	7.93	0.55
	9200	Justice, Public Order, and Safety	8.02	0.55
	9400	Human Resources Administration	7.87	0.54
	9500	Environmental and Housing Programs	7.72	0.53
	9600	Economic Programs	7.92	0.55
	9700	National Security and International Affairs	7.92	0.55
Nonclassifiable	9900	Nonclassifiable Establishments	0.00	0.00

^aDerived from ABAG projection data--developed by Ray Brady.

^bDoes not correct for waste minimization or onsite treatment.

^cIncludes communications and utilities.

- electrical and electronic equipment: 271%
- miscellaneous manufacturing: 213%
- instrumentation and related products: 211%
- non-electrical machinery: 172%

Table 7-3 summarizes the baseline hazardous waste streams in 2000 in tons per year for each of the 10 basic business sectors; again, without any source reduction. This table applies compound growth rates to the 1986 waste streams from each category. Manufacturing (67,844 tons) and Services (30,577 tons) are dominant in 2000.

Table 7-4 provides detailed projections to 2000 for each of the 18 waste categories defined by DHS in its Technical Reference Manual (TRM). Some 86,500 tons are assumed to be manifested. Similarly, Table 7-5 presents baseline projections for small quantity generators to 2000, again in each of the 18 waste categories. The total is 50,265 tons. And Table 7-6 pulls all this together, and adds in baseline projections for one-time cleanups and households. The grand total for 2000--without source reduction--is 139,536 tons of hazardous wastes. The seven largest individual components are:

- waste oil from manufacturing: 29,457
- waste oil from services: 12,413
- metal-containing liquids from manufacturing: 8,012
- non-halogenated solvents from services: 6,492
- non-metallic inorganic liquids from manufacturing: 6,248
- non-halogenated solvents from manufacturing: 5,113

MODERATE AND AGGRESSIVE SOURCE REDUCTION

In Table 7-7 are shown the best available estimates for moderate and aggressive source reduction for several key waste streams. These are drawn from the December 1987 Jacobs Engineering study prepared for DHS: "Hazardous Waste Minimization Potential Workbook." The range is from 10 percent to 25 percent reduction for the moderate category, and 25 percent to 55 percent for the aggressive approach. Aggressive estimates were extrapolated from the moderate ones utilizing prior experience with waste reduction programs and hazardous waste generating industries.

Moderate estimates include adoption of one specific waste reduction technique by a typical firm; aggressive estimates include adoption of two or three specific measures by an average firm. The high reduction potential for household wastes may be attributed to the current lack of education about these wastes and about techniques to reduce them. An aggressive education program could yield significant results in this area. Solvents, dye and paint sludges, and resins have high reduction potential because implementing source reduction techniques for these wastes is simple and effective.

Table 7-8 shows three projections for each of the 18 waste categories defined in the TRM. The general Alameda County projected waste stream profile is consistent with

Table 7-3
Baseline Waste Stream-2000
Alameda County

Business Sector	SIC Codes	1986^a	TPY^{b,c}	Growth (%)
Agriculture	700-800	100	119	-1.22
Construction	1500-1700	1,751	3,102	4.17
Manufacturing	2000-2700	46,595	67,844	2.72
Transportation	4000-4900	10,292	14,189	2.32
Wholesale Trade	5000-5100	2,672	4,285	3.43
Retail Trade	5200-5700	7,688	11,058	2.63
Finance, Ins. and Real Estate	6100-7000	111	182	3.61
Services	7100-8900	14,623	30,577	5.41
Public Administration	9100-9700	3,219	3,804	1.2
Nonclassifiable	9900	---	4,376	0.0
		87,051	139,536	

^aPercent growth compounded annually, 1986-2000.

^bDerived from ABAG projection data--developed by Ray Brandy.

^cIncludes manifested, SQG, and household waste projections.

Table 7-4
 BASELINE SUMMARY - MANIFESTED WASTE ONLY
 YEAR 2000
 ALAMEDA COUNTY

Business Sector	Total Tons/Year	Waste Category																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Agricultural & Mining	3	1		1						1									
Construction	148	10		9	6			52		71									
Manufacturing	57,225	21,529	162	4,932	1,709	0	466	3,230	51	2,605	3,299	7,938	1,382		10	4,541	257		5,114
Transportation, Communication, & Utilities	7,339	782	447	160	108	0	3,966	637	0	439	36	97			38	587			42
Wholesale Trade	3,571	6	194	144	51		2,968	14	12	3	0	17	1						
Retail Trade	224	12	1	50	14	9		23		49						13	22		126
Finance, Insurance, & Real Estate	183	39			48		61	1		8						22	4		61
Services	12,400	660	626	6,030	305	2	523	255		218	63	2,146	764						
Government	3,805	753	29	125	211	0	308	245		66	278	141	1			58			750
Unclassified	1,565	483	186	157	4		16	113	1	59	120	141				296	515		837
TOTAL	86,463	24,275	1,645	11,608	2,456	11	8,308	4,570	64	3,519	3,796	10,481	2,148	0	6	83	10		186
Growth Percent Compounded Annually	1.95%	2.77%	3.55%	4.02%	2.34%	2.83	2.37%	2.48	4.42%	2.51%	2.31%	2.98%	2.42%	0.00%	2.77%	4.67%	1.43%	0.00%	1.81%

WASTE CATEGORIES

1. Waste Oil
2. Halogenated Solvents
3. Non-Halogenated Solvents
4. Organic Liquids
5. Pesticides
6. Dioxins and PCBs
7. Oily Sludges
8. Halogenated Organic Sludges & Solids
9. Non-Halogenated Organic Sludges & Solids
10. Dye & Paint Sludges and Resins
11. Metal-Containing Liquids
12. Metal-Containing Sludges
13. Metal-Containing Liquids
14. Cyanide & Metal Liquids
15. Non-Metallic Inorganic Liquids
16. Non-Metallic Inorganic Sludges
17. Soil
18. Miscellaneous Wastes

Table 7-5
 BASELINE SUMMARY - SMALL QUANTITY GENERATORS
 YEAR 2000
 ALAMEDA COUNTY

Business Sector	Total Tons/Year	Waste Category																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Agricultural	116					75													41
Construction	2,955	1,448	184	184	518						103		4			27			487
Manufacturing	10,621	7,928	181	181	79	9	60		15	15	44	74	137	9	70	1,707			112
Transportation, Communication, & Utilities	6,849	5,208	106	106	23						18		15			50			1,323
Wholesale Trade	713	472	25	25	12	7			1	1	11	8	1			23			127
Retail Trade	10,834	8,129	153	153	30	11					45		25			92			2,196
Services	18,177	11,753	462	462	552	98			2	460	261	121	142	6	10	335			3,513
TOTAL	50,265	34,938	1,111	1,111	1,214	200	60	0	18	476	482	203	324	15	80	2,234	0	0	7,799
Growth Percent Compounded Annually	3.26%	3.13%	2.65%	2.65%	3.69%	1.61%	2.76%	3.28%	2.35%	5.24%	3.24%	2.53%	3.77%	4.59%	2.20%	2.99	0.00%	0.00%	3.80%

WASTE CATEGORIES

- | | |
|---|------------------------------------|
| 1. Waste Oil | 11. Metal-Containing Liquids |
| 2. Halogenated Solvents | 12. Metal-Containing Sludges |
| 3. Non-Halogenated Solvents | 13. Metal-Containing Liquids |
| 4. Organic Liquids | 14. Cyanide & Metal Liquids |
| 5. Pesticides | 15. Non-Metallic Inorganic Liquids |
| 6. Dioxins and PCBs | 16. Non-Metallic Inorganic Sludges |
| 7. Oily Sludges | 17. Soil |
| 8. Halogenated Organic Sludges & Solids | 18. Miscellaneous Wastes |
| 9. Non-Halogenated Organic Sludges & Solids | |
| 10. Dye & Paint Sludges and Resins | |

Table 7-6
TOTAL PROJECTED BASELINE HAZARDOUS
WASTE STREAM
ALAMEDA COUNTY

Business Sector	General SIC Code	Total Tons/Year	Waste Category																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Agricultural	700-800	119	1		1		75				1									41
Construction	1500-1700	3,102	1,458	184	193	524			52		71	103		4			27			487
Manufacturing	2000-3900	67,844	29,457	343	5,113	1,788	9	526	3,230	66	2,620	3,343	8,012	1,519	9	80	6,248	257		5,226
Transportation, Communication, & Utilities	4000-4900	14,188	5,990	553	266	131		3,966	637		439	54	97	15		38	637			1,365
Wholesale Trade	5000-5100	4,284		478	219	169	63	7	2,968	14	13	4	11	25	2			36	22	253
Retail Trade	5200-5900	11,058	8,141	154	203	44	20			23		49	45	1	25			92	4	2,257
Finance, Insurance, & Real Estate	6100-6900	183	39			48		61	1		8						22			4
Services	7100-8900	30,577	12,413	1,088	6,492	857	100	523	255	2	678	324	2,267	906	6	10	393			4,263
Government	9100-9700	3,803	753	29	125	211		308	245		66	278	141	1			296	515		837
Unclassified	9900	<u>4,376</u>	<u>483</u>	<u>186</u>	<u>157</u>	<u>4</u>	<u>0</u>	<u>16</u>	<u>113</u>	<u>1</u>	<u>59</u>	<u>120</u>	<u>141</u>	<u>0</u>	<u>0</u>	<u>6</u>	<u>83</u>	<u>10</u>	<u>900^a</u>	<u>2,097^b</u>
TOTAL		139,536	59,213	2,756	12,719	3,670	211	8,368	4,570	82	3,995	4,278	10,684	2,472	15	134	7,834	808	900	16,830
Growth Percent Compounded Annually		3.34%	3.01%	3.18%	3.90%	2.78%	1.67%	2.38%	2.48%	3.97%	2.83%	2.45%	2.97%	2.60%	4.59%	2.43%	4.19%	1.43	-	-

^aFrom underground tank remediation.

^bIncludes projected household hazardous waste generation.

WASTE CATEGORIES

- | | |
|---|------------------------------------|
| 1. Waste Oil | 11. Metal-Containing Liquids |
| 2. Halogenated Solvents | 12. Metal-Containing Sludges |
| 3. Non-Halogenated Solvents | 13. Metal-Containing Liquids |
| 4. Organic Liquids | 14. Cyanide & Metal Liquids |
| 5. Pesticides | 15. Non-Metallic Inorganic Liquids |
| 6. Dioxins and PCBs | 16. Non-Metallic Inorganic Sludges |
| 7. Oily Sludges | 17. Soil |
| 8. Halogenated Organic Sludges & Solids | 18. Miscellaneous Wastes |
| 9. Non-Halogenated Organic Sludges & Solids | |
| 10. Dye & Paint Sludges and Resins | |

**Table 7-7
Source Reduction Potential
(Percent)**

	Moderate	Aggressive
Solvents	20	50
Metal Solutions	15	40
Dye & Paint Sludges and Resins	25	50
Other Wastes	10	25
Household Hazardous Wastes	25	55

Based on Jacobs Engineering study "Hazardous Waste Minimization Potential Workbook," December 1987.

Table 7-8
WASTE GENERATION, 2000, SHOWING
BASELINE, MODERATE, AND AGGRESSIVE SOURCE REDUCTION SCENARIOS^C
ALAMEDA COUNTY

Approach	Overall Reduction	Total Tons/Year	Waste Category															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Baseline ^C	0	138,636	59,212	2,757	12,719	3,669	211	8,368	4,571	82	3,996	4,378	10,663	2,470	15	135	7,837	808
Moderate	11.8 %	122,349	52,343	2,437	11,243	3,243	186	7,397	4,041	73	3,533	3,783	9,443	2,183	13	119	6,933	714
Aggressive	28.7 %	98,843	42,218	1,965	9,069	2,615	150	5,966	3,259	58	3,049	3,050	6,616	1,761	11	96	5,586	576

WASTE CATEGORIES

- | | |
|---|------------------------------------|
| 1. Waste Oil | 11. Metal-Containing Liquids |
| 2. Halogenated Solvents | 12. Metal-Containing Sludges |
| 3. Non-Halogenated Solvents | 13. Metal-Containing Liquids |
| 4. Organic Liquids | 14. Cyanide & Metal Liquids |
| 5. Pesticides | 15. Non-Metallic Inorganic Liquids |
| 6. Dioxins and PCBs | 16. Non-Metallic Inorganic Sludges |
| 7. Oily Sludges | 17. Soil |
| 8. Halogenated Organic Sludges & Solids | 18. Miscellaneous Wastes |
| 9. Non-Halogenated Organic Sludges & Solids | |
| 10. Dye & Paint Sludges and Resins | |

^ADoes not include household wastes

^BDoes not include contaminated soil

^CAssumes no source reduction; economic growth only

estimates for 1986: waste oil, miscellaneous wastes, solvents, metal-containing liquids, and dioxins and PCBs are the five major waste categories. Together these five categories account for 80 percent of the total waste stream. Contaminated soils (Waste Category 17) are not included because it is not possible to predict accidental spills which would generate these wastes. The baseline projection of 138,636 tons represents a 37 percent increase from 1986. This corresponds to the projected 37 percent increase in county economic development.

The projection assuming moderate source reduction is 22 percent greater than the 1986 estimate: 122,549 tons in 2000. One hundred percent participation in a moderate source reduction effort (an average of one measure per firm) would yield an overall 11.6 percent reduction from baseline generation. Reduction in various waste categories would range from 10 percent in 9 categories to 25 percent in dye and paint sludges and resins. This level of overall source reduction effort would yield 13 to 20 percent reduction of various metal solutions and solvents.

With an aggressive source reduction effort, metal solutions and solvents could each be reduced by 40 to 50 percent. Overall reduction from the baseline generation would be 28.7 percent. The aggressive source reduction effort would yield a countywide total of 98,943 tons of hazardous waste. This is 2 percent less than estimated total hazardous waste generation in 1986. The importance of economic growth to increased waste generation is evident; an aggressive source reduction program based on the Jacobs Engineering study's numbers, when combined with ABAG's projected economic growth, means that Alameda County will not increase in terms of volumes of hazardous waste generation.

This DHS-sponsored approach appears to miss the distinction between source reduction potential at existing facilities (along proportions set out in the Jacobs Engineering Study) and source reduction potential at new facilities, where much lower levels of hazardous waste generation can be demanded by local ordinance. By implementing a strict local ordinance, new growth in manufacturing and services can take place without commensurate increases in hazardous waste generation. These "New Source Performance Standards" can ensure that all new facilities (or significantly expanded facilities) in Alameda County practice a high degree of hazardous waste efficiency in their production processes.

Table 7-9 presents a set of projections for this strict source reduction alternative. This analysis has been completed for key business sectors, not for the 18 waste stream categories shown in Table 7-8. These data were devised using the following assumptions:

- Existing waste generators will, on average, practice aggressive source reduction (as defined by Jacobs): adopting two or three specific waste reduction measures each. Some will adopt more, others less, given an average overall reduction of 28.7 percent from 1986 levels.

Table 7-9
Hazardous Waste Projections Based on
Strict Source Reduction-2000
Alameda County
(Tons/Year)

Business Sector	Hazardous Waste Generation-2000 With Strict Source Reduction	Baseline 2000 With No Source Reduction	Percent Decrease From Baseline 2000
Agricultural and Mining	85	119	29
Construction	1,919	3,102	38
Manufacturing	43,708	67,844	36
Transportation, Communications, and Utilities	9,256	14,189	35
Wholesale Trade	2,704	4,285	37
Retail Trade	7,144	11,058	35
Finance, Insurance, and Real Estate	115	182	37
Services	18,359	30,577	40
Public Administration	2,579	3,804	32
Nonclassifiable ^a	979	1,379	29
Residences	1,348	2,097	36
TOTAL	88,196	138,636	36

^aDoes not include contaminated soil.

- New growth in Alameda County will, on average, be associated with a 50 percent source reduction rate compared to 1986 practices.

ABAG's estimates for hazardous waste generation from industrial growth in each business sector were reduced by 50 percent. Overall source reduction potentials for different industries vary from approximately 35 percent to 70 percent; 50 percent is the midpoint. Some of the industrial growth projected by ABAG will come from expansion of existing facilities; the rest will come from the addition of new facilities. The latter can be expected to attain maximum source reduction potential (70 percent or more, on average), whereas the expanded facilities can be expected to attain only the aggressive source reduction potential. Fifty percent seemed a reasonable overall factor to account for various source reduction potentials and different regulatory requirements. These two levels of reduced hazardous waste generation were then added together to produce the strict source reduction estimates shown on Table 7-9.

Table 7-9 shows total countywide hazardous waste generation to be 88,196 tons: 50 percent from the manufacturing sector, and another 21 percent from the services sector. The average amounts to 36 percent less waste than the baseline projection (with no source reduction) and 11 percent below the aggressive source reduction alternative that fails to distinguish between new and existing facilities.

Projections for 2000 thus range from a 37 percent increase in hazardous wastes if no increased source reduction is achieved, to a 2 percent decrease below the present level if a 28.7 percent reduction in baseline (year 2000) generation were achieved through an aggressive source reduction effort and a 36 percent reduction below baseline if strict reduction is pursued. Table 7-10 summarizes these alternatives. Unforeseen factors such as changes in regulatory or economic trends, and limited potential for increased source reduction in some businesses, may influence these projections. They illustrate that utilizing onsite waste minimization techniques will significantly reduce the amount of hazardous waste requiring treatment. In addition, they show that substantial requirements for hazardous waste treatment will still remain in Alameda County, needs to be met either by use of existing offsite facilities; by use of onsite waste treatment techniques; and--finally--by siting of new hazardous waste management facilities within Alameda County.

Table 7-10
Summary of Alternative Projections
Of Hazardous Waste Generation
(Rounded to the nearest 100 tons)

Scenario	Tons/Year	Overall Change
1986 Waste Stream	100,900	---
2000 Baseline (No Source Reduction)	138,600	+37%
2000 Moderate Source Reduction	122,500	+21%
2000 Aggressive Source Reduction	98,943	-2%
2000 Strict Source Reduction	88,200	-13%

CHAPTER 8 NEED FOR ADDITIONAL CAPACITY

A. BASIC HAZARDOUS WASTE MANAGEMENT OPTIONS AND ECONOMIES OF SCALE

Alameda County's many hazardous waste generators, even with aggressive source reduction, will generate a large volume of hazardous wastes well into the 21st century. Estimates range from a low of 88,200 tons/year to a high of 138,600 tons/year. These wastes require effective management, either onsite or offsite, in a range of appropriate facilities:

- Transfer
- Storage
- Recycling
- Aqueous treatment (including physical, chemical and biological treatment)
- Incineration, except as otherwise prohibited
- Solidification or stabilization
- Mobile treatment
- Residual repositories (for land disposal of treatment residues)

Moderate and aggressive (and strict) source reduction estimates already include significant onsite and offsite recycling capacity.

BASIC HAZARDOUS WASTE MANAGEMENT TECHNOLOGIES

Basic information on the typical characteristics and sizes of hazardous waste management technologies or facilities is provided in Appendix F. This information will assist in understanding the environmental implications of each type of facility found to be needed in Alameda County.

NOTE: It is important to note that the needs analysis shown in this chapter has been superseded by the capacity allocation process currently being conducted by the Hazardous Waste Management Capacity Allocation Committee of the Association of Bay Area Governments as part of the effort to develop an interjurisdictional agreement among the nine Bay Area counties for siting new hazardous waste facilities.

B. ALTERNATIVE PROJECTIONS OF ALAMEDA COUNTY WASTES APPROPRIATE FOR TREATMENT ONSITE OR OFFSITE

Some of these treatment capacity needs could be shifted away from commercial offsite capacity needs if, after maximum waste minimization is achieved, onsite treatment was employed. To predict the reduction in commercial capacity need achievable by onsite actions is difficult, unfortunately, because of the many factors which affect a generator's ability to participate in onsite treatment. Any degree of onsite treatment will reduce offsite needs. More widespread use of onsite treatment will reduce offsite treatment needs to a greater extent.

There are several barriers to implementing a widespread onsite treatment program. First, some onsite treatment technologies may be quite costly. In Alameda County, approximately 66 percent of all businesses included in the No Survey Method had fewer than 10 employees; 90 percent had fewer than 50 employees. Small businesses, such as the majority of Alameda County's predicted (and manifested) hazardous waste generators, cannot easily afford the investments required to install equipment for onsite treatment. Usually these small businesses have very slim profit margins. The No Survey Method (NSM) estimated a total of approximately 7,000 small generators. DEH estimates that they have identified 3,000 generators. A phone survey of a sample of the 7,000 small quantity generators identified was conducted in February 1988. Approximately 65 percent of the firms participating in this survey stated that they do not generate hazardous wastes. This finding may explain the discrepancy between the NSM estimate and the DEH estimate. After the generators have been identified, education and funding plans must be developed to help these firms participate in any onsite effort. Also, appropriate technologies to handle small amounts of waste must be developed and made easily available. Thus, there are significant barriers associated with widespread participation in an onsite treatment program.

It is likely that the large quantity generators in the county, which tend to be large, profitable businesses (see Chapter 3), could increase significantly the amount of onsite treatment they use. While it is thought that a large amount of onsite treatment is currently in place with large generators, it is probable that many local businesses have not yet installed waste treatment technologies. This is encouraging because these large generators contribute a significant amount to the Alameda County hazardous waste stream; are easily identified (they are probably manifestors); and there is a strong possibility that they could fund installation of onsite treatment equipment. Also, technologies to reduce large quantities of waste do exist and are readily available. Alameda County could, with reasonable probability of success, reduce its offsite treatment needs significantly by encouraging large generators to utilize onsite treatment technologies for wastes remaining after aggressive source reduction.

Alameda County's needs for offsite hazardous waste treatment capacity may be differentiated in several different ways:

- By type of waste
- By type of industry generating the waste
- By location of generating industries
- By type of facility
 - Recycling
 - Treatment
 - Transfer
 - Storage
 - Incineration, except as otherwise prohibited
 - Residuals repository

Several different types of treatment can be used to make hazardous wastes as safe as possible before final disposal. Alameda County's needs for these various types of treatment can best be estimated based on the County's projected hazardous waste stream for 2000.

Precipitation, neutralization, carbon adsorption, and solvent recovery/distillation are the four primary treatment methods for hazardous wastes. Secondary treatments include incineration and stabilization. After wastes have been fully treated, any hazardous residuals must then be deposited in a repository. Figure 8-1 shows this sequence of actions.

The 18 waste categories defined in the DHS Technical Reference Manual can be regrouped into five waste groups based on treatment requirements. These groups are waste metal solutions, high or low pH solutions, aqueous organic solutions, spent solvents or waste oils, and solid or liquid waste organics.

Table 8-1 summarizes waste reduction efficiencies of each basic treatment method. A particular hazardous waste can be reduced only as much as its required treatment sequence will allow. For example, waste metal solutions use precipitation as the primary treatment method. Here they are reduced, in the maximum case, by 90 percent. Precipitation residuals are then stabilized, which increases their weight a minimum of 20 percent. The net reduction potential for waste metal solutions is 88 percent. For high or low pH solutions 100 percent reduction is possible. The potential for aqueous organic solutions is 98.8 percent. Spent solvents can be reduced by as much as 97 percent, waste oils by 97.6 percent. Solid or liquid waste organics have a reduction potential of 88 percent. With proper treatment, only 2.4 to 12 percent of hazardous wastes generated actually require ultimate disposal in a repository.

Figure 8-2 summarizes the different waste treatment capacity requirements in 2000 were no source reduction to be practiced (Baseline projection).

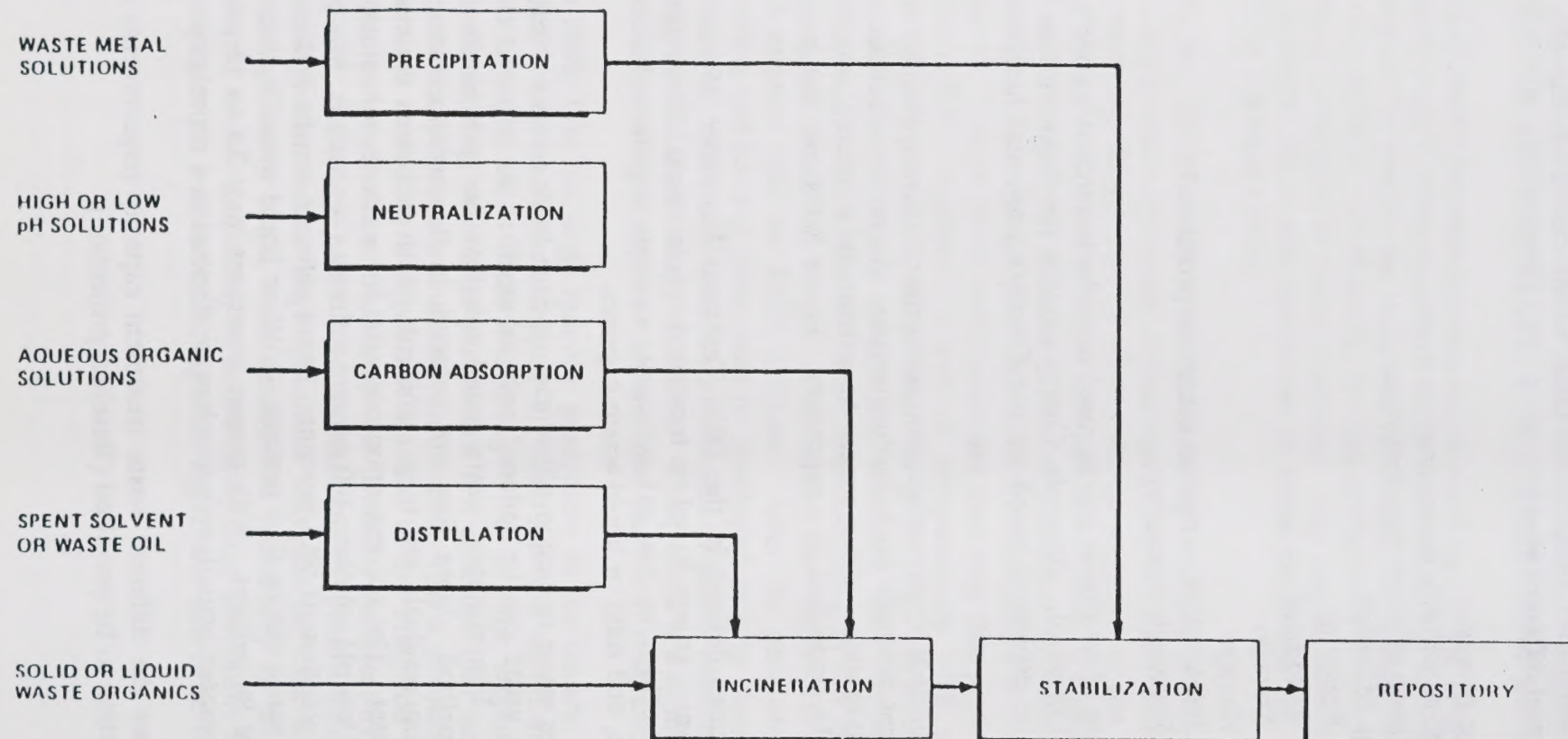


Figure 8-1
WASTE TREATMENT SEQUENCES

**Table 8-1
Generic Treatment Efficiencies**

Generic Treatment	Percent Reduction by Weight
Oil Recovery	70-80%
Solvent Recovery/Distillation	70-75%
Carbon Adsorption	80-90%
Incineration	85-90%
Precipitation	50-90%
Neutralization (Non-Metal)	85-100%
Stabilization	Adds 20-40%

C. POTENTIAL EXPANSION OF EXISTING TREATMENT FACILITIES

All 2408 require that each County's hazardous waste management plan include an analysis of the potential areas in which hazardous wastes were stored and managed in existing treatment, storage and disposal facilities (TSDIs), documented in Chapter 3, and whether there was a high potential of a County's qualified existing or future County Government (e.g., Planning and Vision Hall/Bureau). Current operations of these facilities and potential future expansion are described in Appendix C.

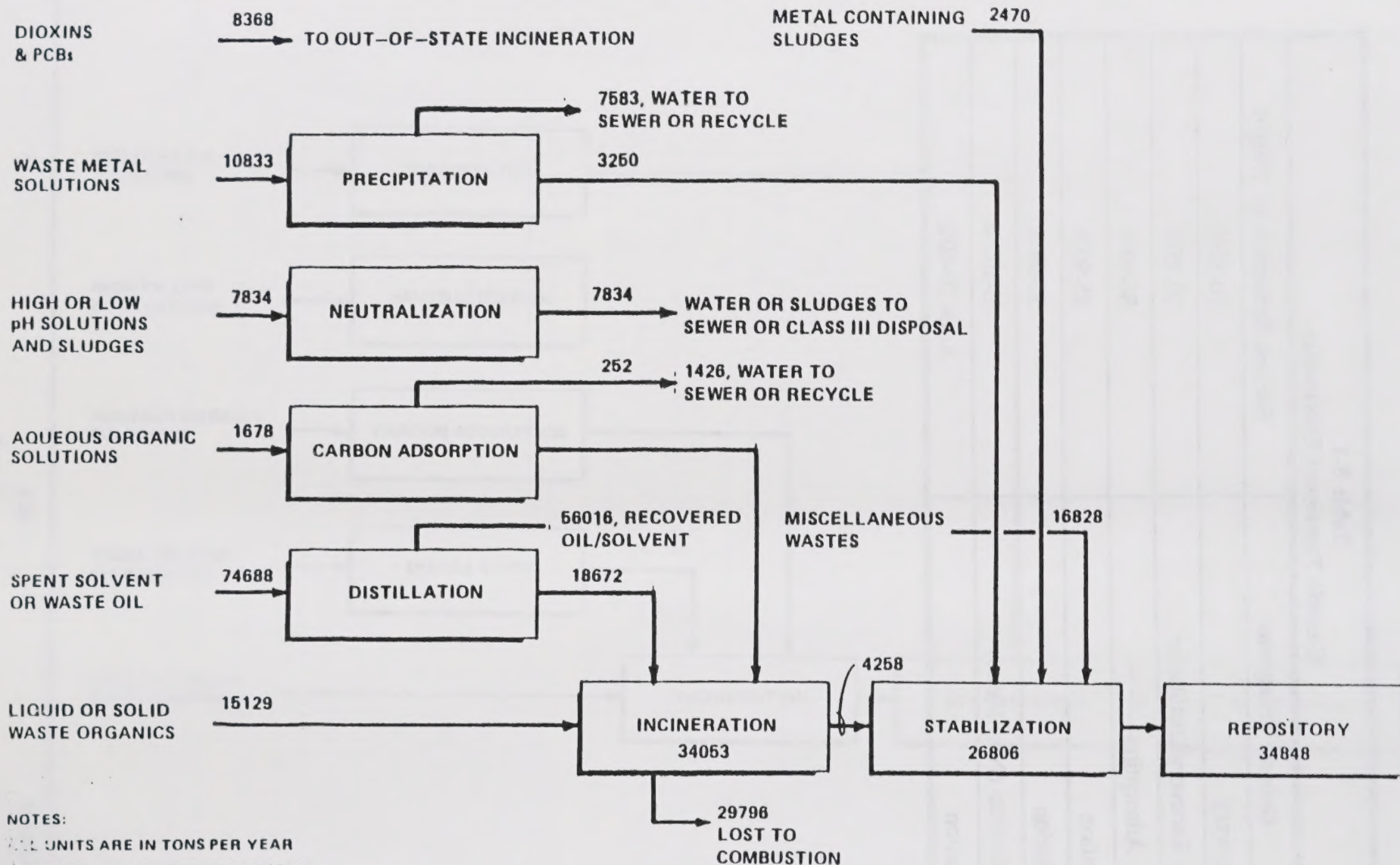


Figure 8-2
WASTE TREATMENT SEQUENCES
YEAR 2000
BASELINE CAPACITIES

Table 8-2 shows the various treatment capacity needs for this economically-driven baseline generation projection, year 2000, without source reduction. (NOTE: This ignores possible use of onsite treatment systems and transportable treatment units.) Baseline facility capacity needs are summarized in Table 8-3.

These requirements can be reduced, as discussed above, with moderate, aggressive, or strict source reduction efforts and maximum treatment reduction efficiencies. (Average values for efficiency were used in this table.)

Manufacturing represents the highest capacity need in all categories of treatment type, except out-of-state incineration for dioxins and PCBs. Services shows the next greatest demand for distillation, carbon adsorption, precipitation, incineration, stabilization, and repository disposal. Waste reduction would reduce these treatment, incineration, and disposal capacity requirements--the more reduction in wastes, the more reduction in capacity needs.

Table 8-4 illustrates the treatment capacities needed in Alameda County for 2000 waste generation projections at each of the projected levels of onsite source reduction. Moderate source reduction reduces capacity needs by 10 to 20 percent. Aggressive source reduction reduces capacity needs by 25 to 50 percent. And strict source reduction gives an across-the-board reduction of 38.7 percent.

As expected from the county waste stream profile, the greatest need is for oil and solvent recovery. With no increased source reduction efforts, full recovery would yield 1,421 tons (2.4 percent of baseline generation) of waste oil residuals and 464 tons (3 percent of baseline generation) of solvent residuals requiring disposal. In contrast, an aggressive source reduction effort combined with full recovery would yield 1,066 tons (1.8 percent of baseline generation) of waste oil residuals and 232 tons (1.5 percent of baseline generation) of solvent residuals. The combined effect of maximum source reduction and full treatment yields the greatest possible reduction in hazardous wastes requiring ultimate disposal.

C. POTENTIAL EXPANSION OF EXISTING KEY FACILITIES

AB 2948 requires that each county's hazardous waste management plan include an analysis of the probable extent to which that county's future waste stream can be managed in existing treatment, storage, and disposal facilities (TSDFs). As documented in Chapter 3, four facilities received a large proportion of Alameda County's manifested wastes in 1986; Casmalia, Kettleman Hills, Panoche, and Vine Hill/Baker. Current operations at these facilities and potential future expansion are described in Appendix G.

Table 8-2
Alameda County^{b,c}

Business Sector	Oil/Solvent Distillation	Carbon Adsorption^a	Precipitation	Neutralization	Incineration	Stabilization^{d,e}	Repository	Out-of-State Dioxin & PCB Incineration
Agriculture	2				77	51	66	
Construction	1,835	6		27	1,204	642	835	
Manufacturing	34,913	1,204	8,101	6,505	18,760	11,516	14,971	526
Transportation, Communication and Utilities	6,809	101	135	637	2,877	1,780	2,314	3,996
Wholesale Trade	866		25	58	329	304	395	2,968
Retail Trade	8,498		1	96	2,306	2,571	3,342	
Finance, Insurance and Real Estate	39	48		22	26	7	9	61
Services	19,993	187	2,283	393	7,055	6,736	8,757	523
Government	907	130	141	811	917	995	1,294	308
Unclassified	826	2	147	93	502	293	391	16
Total	74,688	1,678	10,833	8,642	34,053	26,806^f	34,848^f	8,398

^aSome of the organic wastes that can be treated via carbon adsorption could not be specifically identified in the No Survey Method; this column represents manifested waste only.

^bThis table does not include capacity for contaminated soils from a variety of sources. Also, the focus on onsite treatment is intensifying.

^cAverage values for weight reduction were used in calculating capacity requirements for processes.

^dMiscellaneous wastes, e.g., batteries, lab packs, and metal dust are assumed to be stabilized without pretreatment.

^eIncludes household hazardous wastes.

^fTotals recognize that stabilization reduces toxicity, but adds mass.

**Table 8-3
Baseline Waste Stream-2000
Alameda County**

Business Sector Growth (%)	SIC Codes	1986^a	TPY^{b,c}	
Agriculture	700-800	100	119	-1.22
Construction	1500-1700	1,751	3,102	4.17
Manufacturing	2000-2700	45,595	67,844	2.72
Transportation	4000-4900	10,292	14,189	2.32
Wholesale Trade	5000-5100	2,672	4,285	3.43
Retail Trade	5200-5700	7,688	11,058	2.63
Finance, Ins. and Real Estate	6100-7000	111	182	3.61
Services	7100-8900	14,623	30,577	5.41
Public Administration	9100-9700	3,219	3,804	1.2
Nonclassifiable	9900		4,376	0.0

^aPercent growth compounded annually, 1986-2000

^bDerived from ABAG projection data--Developed by Ray Brady

^cIncludes manifested, SQG, and household waste projections precipitation and stabilization capacities. Requirements for final disposal at a repository are greatest in the manufacturing and services sectors, where most wastes are oils and solvents which yield only 70 to 80 percent reduction with distillation.

Table 8-4
Needs Assessment Capacity Requirements
With Different Waste Reduction Scenarios
Year 2000
Alameda County

Tons Per Year

	Baseline^a	Moderate	% Baseline	Aggressive	% Baseline	Strict^d
Oil Distillation ^c	59,212	53,291	90%	44,409	75%	36,292
Solvent Distillation ^c	15,476	12,381	80%	7,739	50%	7,700 ^e
Carbon Absorption	1,678	1,510	90%	1,259	75%	1,028
Precipitation	10,833	9,208	85%	6,500	60%	6,500 ^e
Neutralization	8,642	7,778	90%	6,482	75%	5,297
Incineration	34,053	30,261	89%	24,573	72%	20,871
Stabilization	26,806	23,627	88%	18,828	70%	16,430
Repository	34,848	30,715	88%	24,476	70%	21,359
Out-Of-State Incineration ^b	8,398	8,398	100%	8,398	100%	8,398

^aNo source reduction

^bOut-of-state incineration is not affected by source reduction since PCB discovery and abatement is an ongoing program based on past practices.

^cThese categories were separated from each other since their reduction potentials are different.

^dDetailed calculations were not possible for each waste treatment category. Instead, the same proportional reduction (some 38.7 percent) was applied to each Baseline category once the out-of-state incineration total was eliminated from both groups.

^eAssumes lower aggressive total.

D. IMPLICATIONS FOR HAZARDOUS WASTE MANAGEMENT CAPACITY IN ALAMEDA COUNTY

On the assumption that the need for new facilities results from strict source reduction shown in Table 8-4, not requiring further onsite treatment, and that facilities are developed along the size projections set forth earlier in this chapter, Alameda County's apparent offsite facility requirements are summarized in Table 8-5. These estimates incorporate adequate flexibility to meet actual siting requirements. Numbers are rounded to the nearest 100 tons.

One large oil recycling plant¹ appears warranted; this capacity might be met by expansion of one or more of the three facilities already operating here, or by siting of a new facility. The aggressive source reduction estimates from Jacobs Engineering's report include a component for offsite recycling, which requires siting.

Some additional capacity for solvent distillation and recycling appears to be needed. Alternatively, this need might be met by expanded use of the Romic facility in San Mateo County if sufficient capacity exists there. Romic has applied to the City of Newark to site a rail transfer facility capable of handling 23,000 tons of waste annually. Plans are to transport waste from the East Palo Alto facility to the Newark facility via the Dumbarton Bridge. Waste would be loaded on outbound rail cars at the Newark facility. The Newark facility would handle Alameda County and other county wastes thus serving as a regional facility.

The County's needs for aqueous waste treatment are much smaller than the typical economic and technical facility scale needed. Use of mobile treatment technologies would seem appropriate--or export to fixed treatment facilities located in other counties.

The data indicate that the need for rotary kiln incineration seems close to the smaller scale of a modern facility (about 70 percent). It seems that Alameda County should include such a facility in its Plan. Formal permitting proposals for new incinerators are already underway in the Martinez area by Stauffer Chemical Co.; in southern California, the Vernon proposal; and in Kings County at the Kettleman Hills facility. Moreover, some liquid incineratable wastes could go to the cement kiln incinerator in Lebec, Kern County. New incineration capacity is now under construction in Arizona. Nevertheless, the presence of over 20,000 tons per year of incineratable wastes from Alameda County generators even after strict source reduction (and over 34,000 tons in the baseline alternative) requires careful attention in this planning process. It seems

¹Evergreen Oil Inc., began operating its oil recycling facility in Newark in 1986. The state of the art recycling process used at this facility produces no hazardous waste byproducts. In 1987, Evergreen recycled approximately 21,000 tons of waste oil. Evergreen estimates that it collected about 2,630 tons of waste oil from within Alameda County with the remaining 18,370 tons coming from other counties. The facility has enough capacity to handle between 35,000 and 42,000 tons of waste oil each year. This facility substantially increases the County's existing waste oil recycling capacity and also serves as a regional facility for other counties.

Table 8-5
Alameda County
Potential Offsite Facility Development Requirements
(tons*)

Technology	Waste Requiring Treatment^a	Typical Facility Scale^b	Number and Scale of Potential Facilities Required^c
Oil Distillation	36,300	40,000	1 Large
Incineration**	20,900	30,000	1 Small ^d
Stabilization	16,400	50,000 (varies)	(Designed to scale)
Solvent Distillation	7,700	10,000	1 Small
Carbon Adsorption	1,000		
Precipitation	6,500	70,000	Mobile Systems
Neutralization	5,300		
Repository	21,400 ^e	75,000	0 ^f
Transfer Facilities	Large volumes from small generators	10,000	2 or 3

^aEstimated; assumes a comprehensive waste management program with aggressive source reduction by existing generators and strict requirements for all new facilities.

^bBased on typical economies of scale for private-sector hazardous waste management facilities. Installation of new facilities in 1987-1989 will reduce requirements for new facilities.

^cAssumes basic comparability between capacity requirements and facility scale.

^dAssumes limit import of incineratable wastes to meet minimum facility size capacity.

^eAnnual capacity requirement.

^fAssumes export of wastes; repository siting not ruled out, but would require significant imports of wastes to meet minimum facility capacity.

*Rounded to the nearest 100 tons.

**See Policy 2B.

unrealistic to assume much onsite incineration of these wastes, and unreasonable to assume that they can all be sent entirely out-of-county forever.

A residuals repository in Alameda County does not seem warranted by these data. The smallest commercial-scale facility is estimated at some 75,000 tons/year of use. This is approximately three-and-a-half times larger than the wastes requiring disposal in the strict source reduction alternative, and more than twice the size even of the baseline waste stream estimate with no source reduction. These wastes presumably would have to be exported to a facility sited in another county, such as the Kettleman Hills facility in Kings County, or the Casmalia facility in Santa Barbara County. These exports would have to be included in an intercounty agreement. Alternatively, the local treatment residues requiring disposal could be placed in a repository located in Alameda County. This facility would either have to be subsidized by local governments (given its small scale), or important large volumes of waste residues from other counties.

Small transfer stations appear to be needed in North County and South County as well as in the Livermore Valley to responsibly meet the needs of the hundreds of small waste generators located in these areas.

The County's priority siting requirements under these assumptions are for:

- Two or three transfer stations
- A small incinerator, except as otherwise prohibited
- A small solvents recovery facility
- Expanded waste oil recycling capacity (need will be diminished based on planned new facilities)
- A designed stabilization unit

The information on which these assumptions are based are uncertain. The estimates of existing and projected waste generation are uncertain. Most development and siting proposals will be prepared by private developers using their own estimates of regional--or even statewide and national--markets. A portion of the identified facility needs may be addressed through intercounty agreements. For example, importation of some hazardous wastes for treatment in facilities, such as oil recycling or an incinerator, designed and sized primarily to meet local needs in Alameda County might counterbalance exports of residuals to an economically-sized repository unit located elsewhere. In this event the facility's scale would have to be adjusted upward accordingly.

Chapter 9

MEETING CAPACITY NEEDS

A. INTRODUCTION

Health and Safety Code Section 25135.1 (d)(6) states that instead of identifying specific facilities and sites, the County Hazardous Waste Management Plan (Plan) may include siting criteria to be used in selecting sites for new hazardous waste management facilities. In that case the Plan must also "designate general areas where the criteria might be applicable." These general areas are to be shown on maps in the Plan.

The purpose of this Chapter is to describe the siting criteria and designate general areas where the criteria might be applicable, to the extent possible. However, because of the small scale of the maps (1" = 3 miles) and the fact that some of the criteria are not mappable, the maps cannot be used to select a specific site for a facility. Before considering any specific site for a facility, whether in a designated area or not, each developer should consult the local jurisdiction for site specific data.

It is important to note that any proposed facility will be subject not only to the criteria included in this plan, but also to the permitting process of the local jurisdiction in which the facility is proposed. Local permitting processes may be more stringent than the County criteria and are likely to require compliance with the California Environmental Quality Act and preparation of a risk assessment.

B. SITING CRITERIA

The siting criteria are intended to apply to siting decisions in unincorporated areas of the county as well as in incorporated cities. They are to be used whenever a land use decision is required to site and construct a new offsite multi-user hazardous waste management facility, significantly expand or modify an existing hazardous waste management facility, or expand or modify an existing onsite hazardous waste management facility to become an offsite facility for other generators.

Siting criteria have been developed to identify potentially environmentally appropriate locations for hazardous waste management facilities. These criteria will help facility developers conduct a preliminary screening of sites and understand the major issues of concern to the community. The criteria developed for Alameda County include major requirements of federal and state laws and regulations and of local planning documents. This should assist developers in finding locations that are consistent with current legal and policy requirements.

Two categories of siting criteria have been developed for use in this Plan. They are as follows:

1. **Conditional:** Designated facilities may be located in areas that meet these criteria, if an engineered solution can be found to mitigate potential incompatibilities between the facility and surrounding land uses and/or potential impacts of the facility on its environment. Other conditions could include funding an investigation, designing special mitigation features, conducting a risk assessment to identify appropriate buffer zones, etc.
2. **Exclusionary:** Designated facilities cannot be located in areas described in these criteria due to incompatibility between the facility and the surrounding land area, based on environmental, public service/health, or land use constraints.

The criteria have been defined for three categories of facilities which have a potential to be sited in Alameda County. The three types of facilities are as follows:

1. **Small-scale transfer and storage facilities:** Facilities with wastestreams small enough to be exempt from manifest requirements as described in California Health and Safety Code, Division 20, Chapter 6.5, Article 6. Wastes from any given generator must not exceed a total volume of five gallons or a total weight of 50 pounds. Household hazardous waste collection facilities may be considered small scale at the option of each individual jurisdiction.
2. **Industrial transfer/storage/treatment facilities:** Any hazardous waste management facility which is not a small-scale transfer and storage facility or a residuals repository. This facility category includes but is not limited to:
 - a. Manifested waste transfer station
 - b. Recycling facility
 - c. Aqueous treatment facility
 - d. Stabilization and solidification facility
3. **Residuals Repositories:** A hazardous waste disposal facility for collection of residual wastes, defined as the residues from hazardous waste treatment facilities after treatment, and other irreducible stabilized or detoxified hazardous wastes.

Table 9-1 presents the criteria for each of the three categories of facilities described above.

**Table 9-1
Alameda County General Siting Criteria**

DHS Definition	Small-Scale Transfer and Storage Facility	Industrial Transfer/Storage/Treatment Facility	Residuals Repositories
A. Seismic	Exclusionary	Exclusionary	Exclusionary
	No facilities shall be placed within 200 feet of an active or recently active fault. CCR Title 22, Section 66391(a) (f11) A(1) and (2).		
B. Floodplains	Conditional	Conditional	Exclusionary
100-yr. floodplains and areas subject to flooding by dam or levee failure and tsunamis, seiches, and coastal flooding	May be built in areas subject to 100-year flooding if protected by engineered solutions designed to preclude failure, such as berms, raising above flood levels, etc.		May not be located in areas subject to 100-year flooding even with protection CFR Title 40, Section 264.18(b); and CCR 22, Section 66391(a)(11)(b)).
C. Wetlands	Exclusionary	Exclusionary	Exclusionary
Saltwater, freshwater, and brackish marshes, swamps and bogs inundated by surface or groundwater with a frequency to support, a prevalence of vegetative or aquatic life which requires saturated soil conditions for growth and reproduction, as defined in adopted regional or state policies.	No facilities shall be located in wetlands.		
D. Habitat of Endangered Species	Exclusionary	Exclusionary	Exclusionary
Plant and animal rare, endangered, and critical habitat areas.	No facilities should be located within critical habitats of endangered species, defined as areas known to be inhabited permanently or seasonally or known to be critical at any stage in the life cycle of any species of wildlife or vegetation identified or being considered for identification as "endangered" or "threatened" by the U.S. Department of the Interior or the State of California.		
E. Unstable Soils	Conditional	Conditional	Exclusionary
Steep slopes and areas subject to liquefaction and subsidence due to natural causes.	Facilities located in these areas should have engineered design features (i.e., containment structures) to assure structural stability.		May not be located in areas with 25 percent slope or greater.
F. Major Aquifer Recharge Areas	Conditional	Conditional	Exclusionary
Areas known or suspected to be supplying principal recharge to a regional aquifer, as defined in adopted general, regional, or state plans.	If located in these areas, facilities should provide properly designed, constructed, and maintained engineering spill containment features, inspection, and monitoring measures and other environmental protection controls to prevent runoff from the facility.		Should be prohibited in major aquifer recharge areas.
Note: The purpose of these criteria is to designate general areas only. Any proposed facility meeting these general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, state, regional and local agencies; and the permitting processes and policies of the local jurisdiction.			

**Table 9-1
Alameda County General Siting Criteria**

DHS Definition	Small-Scale Transfer and Storage Facility	Industrial Transfer/Storage/Treatment Facility	Residuals Repositories
G. Distances From Residences*	Conditional	Conditional	Exclusionary
Residences	Proximity to residential areas is desirable to encourage facility use.	Treatment, storage, or transfer facilities handling ignitable, explosive, reactive, or acutely hazardous wastes must provide a minimum buffer zone of at least 2,000 feet between the nearest residence and the facility, unless the developer can demonstrate by risk assessment and as part of the local permitting process that a smaller buffer zone provides adequate protection for the public in the event of an accident. For other facilities, including recycling, transfer, or storage of other types of hazardous wastes, a buffer zone of at least 500 feet is required between the operational area within the facility and the nearest residence (again, unless the developer can demonstrate by risk assessment and as part of the local permitting process that a smaller buffer zone provides adequate protection for the public in the event of an accident).	No residuals repository shall be located such that the active portion of the facility is within 2,000 feet of a permanent residence (including residences located in industrial zones or areas designated industrial in the applicable general plan and legal live/work uses) or any area designated for use in the applicable general plan, (unless developer can demonstrate by risk assessment and as part of the local permitting process that a smaller buffer zone provides adequate protection for the public in the event of an accident).
II. Distance From Immobile Populations*	Conditional	Conditional	Conditional
Schools, hospitals, convalescent homes, prisons, facilities for the mentally ill, day care centers, homeless shelters, etc.	Proximity to residential areas is desirable to encourage facility use.	Larger buffer zones are required between a transfer station, storage, or treatment facility, and any immobile populations where evacuation in the event of an accident at the facility is likely to be difficult or inadvisable. This is especially true for facilities handling ignitable, explosive, or reactive wastes. A minimum buffer zone of 5,000 feet between a facility and any immobile population is therefore required, unless the developer can demonstrate by risk assessment and as part of the local permitting process that a smaller buffer zone provides adequate protection for the immobile population.	Larger buffer zones are required between a residuals repository and any immobile populations because evacuation in the event of an accident at the facility is likely to be difficult or inadvisable. This is especially true for repository facilities handling ignitable, explosive, reactive, or acutely toxic wastes. A minimum buffer zone of 5,000 feet between a facility and any immobile population is therefore required unless the developer can demonstrate by risk assessment and as part of the local permitting process that a smaller buffer zone provides adequate protection to the immobile population.

Note: The purpose of these criteria is to designate general areas only. Any proposed facility meeting these general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, state, regional and local agencies; and the permitting processes and policies of the local jurisdiction.

*These criteria are not mappable due to lack of information and the scale of maps to be appropriate produced for the Plan.

**Table 9-1
Alameda County General Siting Criteria**

DHS Definition	Small-Scale Transfer and Storage Facility	Industrial Transfer/Storage/Treatment Facility	Residuals Repositories
I. Proximity to Major Transportation Routes	Conditional	Conditional	Conditional
	Should be located so as to minimize distances to major transportation routes which are designed to accommodate heavy vehicles.		Should have good access to major transportation routes, but may have to be more distant from waste generation sites than other types because of their need for larger land areas.
	All Facilities: Road networks leading to major transportation routes should not pass through residential neighborhoods, should minimize residential frontages in other areas, and should be demonstrated to be safe with regard to road design and construction, accident rates, excessive traffic etc.		
J. Permeable Strata and Soils	Conditional	Conditional	Conditional
Permeability requirements are defined in CCR Title 23, Chapter 15.	Facilities should avoid locating on highly permeable soils or sediment. Facilities located in areas where surficial soils are principally permeable materials such as sand and gravel should provide for spill containment and monitoring measures.		Facilities must conform to requirements of SWRCB.
K. Nonattainment Air Areas	Conditional	Conditional	Conditional
Areas not in compliance with national air quality standards for one or more measured air pollutants.	All facilities must comply with requirements of the Bay Area Air Quality Management District.		
L. PSD Air Areas	Conditional	Conditional	Conditional
Prevention of significant deterioration areas are those in compliance with national air quality standards.	All facilities must comply with permitting requirements of the Bay Area Air Quality Management District.		
M. Prime Agricultural Lands	Conditional	Conditional	Conditional
Areas designated as prime agricultural lands in the applicable general, regional, or state plan.	Prime agricultural lands under California law may not be used for urban purposes unless an overriding public need is demonstrated by the applicant. When siting hazardous waste management facilities in these areas, overriding public service needs must be demonstrated by the applicant.		
N. Depth to Groundwater	Conditional	Conditional	Conditional
	Facilities may be located in high groundwater areas if the engineered design of the containment structure is capable of withstanding failure because of geologic or soil failures which may arise.		Facilities must conform to requirements of SWRCB.
Note: The purpose of these criteria is to designate general areas only. Any proposed facility meeting these general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, state, regional and local agencies; and the permitting processes and policies of the local jurisdiction.			

**Table 9-1
Alameda County General Siting Criteria**

DHS Definition	Small-Scale Transfer and Storage Facility	Industrial Transfer/Storage/Treatment Facility	Residuals Repositories
O. Proximity to Public Services	Conditional	Conditional	Conditional
Public utilities (sewer, water etc.), and emergency services, including fire, police, medical, and hazardous materials response personnel/facilities/equipment. Other public facilities such as corporation yards, roads, large open spaces on military reservations, and state school lands in remote areas.	For transfer or storage facilities, self-sufficient services may be appropriate, where these facilities are necessary to serve remote rural areas. In urban areas, public services should be available. For other facilities, public water and sewer services and emergency services should be readily available.		For residuals repositories, self-sufficient services may be necessary (i.e., emergency fire, wastewater facilities, etc.).
	Potential adverse impacts which could occur because of proximity to public facilities shall be determined as a part of the risk assessment conducted in the permitting process. This should consider the physical and chemical characteristics of the wastes that will be handled and the design features of the facility. Proximity to other public facilities such as corporation yards, utilities, roads, large open spaces on military reservation, and state school lands in remote areas may be acceptable.		
P. Proximity to Waste Generation Stream	Conditional	Conditional	Conditional
Transportation of hazardous waste should be minimized to decrease risk of accidental spills.	Collection centers should be close to residential zoned and small quantity generator areas to encourage their use.	TSDFs should be located close to waste generation sources to minimize the risks of transportation.	Repositories may be located more distant from waste generation sources than other facilities because of the need for large land areas.
Q. Appropriate Zoning	Conditional	Conditional	Conditional
Specified by the appropriate jurisdiction. All jurisdictions should have some type of zoning which will allow siting of different types of hazardous waste management facilities.	Commercial and industrial zones near residential areas are appropriate.	TSDFs are basically industrial facilities. However, the siting of hazardous waste management facilities is not required to be limited to these zones if special zones are created.	Because repositories usually require large land areas, it may not be practical or economical to site them in developed commercial or industrial areas. Specially zoned areas or rezoning of other areas may be appropriate. The intent is to locate Residuals Repositories in more remote open areas.
R. Recreational, Cultural or Aesthetic Areas	Conditional	Exclusionary	Exclusionary
Historic preservation, Indian reservations, and other cultural and scenic areas, as defined in locally adopted general plans.	Low-volume transfer and storage facilities may be allowed in these areas if necessary to handle hazardous wastes generated by visitors, workers, or residents in these areas.	Other facilities should not be allowed in these areas.	
S. Mineral Resources Areas	Conditional	Conditional	Conditional
Defined as Sand and Gravel in Alameda County General Plan.	No facilities should be sited so as to preclude extraction of minerals necessary to sustain the economy of the State.		
Note: The purpose of these criteria is to designate general areas only. Any proposed facility meeting these general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, state, regional and local agencies; and the permitting processes and policies of the local jurisdiction.			

**Table 9-1
Alameda County General Siting Criteria**

DHS Definition	Small-Scale Transfer and Storage Facility	Industrial Transfer/Storage/Treatment Facility	Residuals Repositories
T. Military Lands	Exclusionary	Exclusionary	Exclusionary
	It is the policy of the Department of Defense (DOD) that military land shall not be considered for siting of public hazardous waste management facilities. This policy is considered nonnegotiable by DOD.		
U. Other State, Federal and Indian Lands	Conditional	Conditional	Conditional
	The criteria listed above are suitable for use in determining the suitability of lands within these areas for siting of hazardous waste management facilities.		
ADDITIONAL ALAMEDA COUNTY CRITERIA			
	Small-Scale Transfer and Storage Facility	Industrial Transfer/Storage/Treatment Facility	Residuals Repositories
Airport zones	Exclusionary	Exclusionary	Exclusionary
	No facility may be located within an FAA approach zone or air installation compatible use zone, generally defined as the area immediately surrounding a public or military airport, including the immediate approach and take-off paths.		
Note: The purpose of these criteria is to designate general areas only. Any proposed facility meeting these general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, state, regional and local agencies; and the permitting processes and policies of the local jurisdiction.			

C. CRITERIA MAPPING AND DESIGNATION OF GENERAL AREAS

AB-2948 and the DHS Guidelines require that counties which include siting criteria in their plans must also identify "general areas where the criteria might be applicable" (DHS Guidelines, p. 3-11; Sec. 25135.7 (a)(3), California Health and Safety Code).

Several of the criteria shown in Table 9-1 are not mappable due to lack of information, the scale of the maps and/or the site specific nature of the criteria.

The mappable siting criteria are illustrated on Figures 9-1 through 9-8. Figures 9-1, 9-3, and 9-5 show land use, environmental, and high hazard/physical criteria, respectively, for small-scale transfer and storage facilities and industrial transfer/storage/treatment facilities. Figures 9-2, 9-4 and 9-6 show the same criteria for residuals repositories. Figures 9-7 and 9-8 are composite maps showing all areas meeting the mappable criteria for small-scale and industrial transfer/storage and treatment facilities and residuals repositories, respectively. These are the designated general areas where the criteria might be applicable.

The purpose of the siting criteria is to designate general areas only. Larger scale maps and/or field investigations should be used by the developer to evaluate specific sites before permitting. Any proposed facility meeting the general criteria will be required to comply with the California Environmental Act and any applicable requirements of federal, regional, and local agencies and jurisdictions, any of which may be more stringent than the general criteria included in this Plan.

The developer of a proposed facility will have to perform extensive evaluations to determine whether a site satisfies all of the siting criteria.

D. THE APPEALS PROCESS

AB 2948 created a new process to appeal local land-use decisions concerning hazardous waste management facilities (Title 22, Sec. 25199.10, California Health and Safety Code). It is intended to provide a regional or statewide perspective to assure that the public health, safety and welfare are adequately protected by new facilities, on the one hand, and on the other, to assure that an environmentally sound facility needed to serve the local area is not inappropriately denied by a local land-use authority. That is, the local area--Alameda County, its 14 cities and the JPA--is expected to fulfill its commitment to approve facilities proposed which comply with these siting criteria (including their conformance with local needs or inter-jurisdictional agreements). The state appeal board has the Authority to overturn a local land-use decision concerning a multi-user hazardous waste management facility which is found to be consistent with this Plan.



NOTE:
1 Low-volume transfer and storage facilities may be allowed in these areas if necessary to handle hazardous wastes generated by visitors, workers, or residents in these areas. Other recreational, cultural, and aesthetic areas are located throughout the County at specific sites too small to map. Industrial transfer/storage/treatment facilities should not be allowed in these areas.

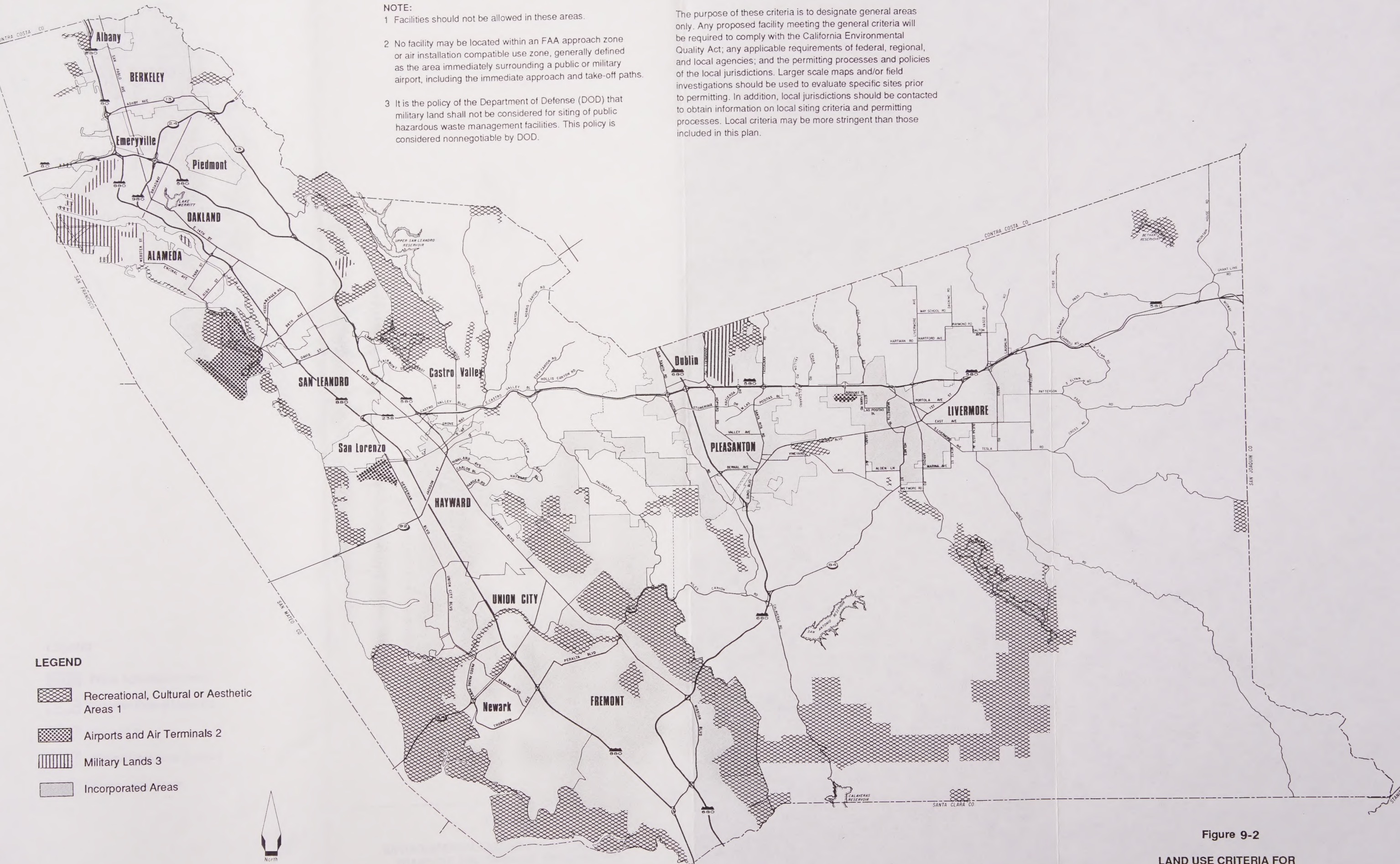
2 No facility may be located within an FAA approach zone or air installation compatible use zone, generally defined as the area immediately surrounding a public or military airport, including the immediate approach and take-off paths.

3 It is the policy of the Department of Defense (DOD) that military land shall not be considered for siting of public hazardous waste management facilities. This policy is considered nonnegotiable by DOD.

The purpose of these criteria is to designate general areas only. Any proposed facility meeting the general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, regional, and local agencies; and the permitting processes and policies of the local jurisdictions. Larger scale maps and/or field investigations should be used to evaluate specific sites prior to permitting. In addition, local jurisdictions should be contacted to obtain information on local siting criteria and permitting processes. Local criteria may be more stringent than those included in this plan.

Figure 9-1

LAND USE CRITERIA FOR SMALL-SCALE TRANSFER AND STORAGE FACILITIES AND INDUSTRIAL TRANSFER/STORAGE/TREATMENT FACILITIES



- NOTE:
- 1 Facilities should not be allowed in these areas.
 - 2 No facility may be located within an FAA approach zone or air installation compatible use zone, generally defined as the area immediately surrounding a public or military airport, including the immediate approach and take-off paths.
 - 3 It is the policy of the Department of Defense (DOD) that military land shall not be considered for siting of public hazardous waste management facilities. This policy is considered nonnegotiable by DOD.

The purpose of these criteria is to designate general areas only. Any proposed facility meeting the general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, regional, and local agencies; and the permitting processes and policies of the local jurisdictions. Larger scale maps and/or field investigations should be used to evaluate specific sites prior to permitting. In addition, local jurisdictions should be contacted to obtain information on local siting criteria and permitting processes. Local criteria may be more stringent than those included in this plan.

Figure 9-2
LAND USE CRITERIA FOR
RESIDUALS REPOSITORIES



- NOTE:**
- 1 Prime agricultural lands under California law may not be used for urban purposes unless an overriding public need is demonstrated by the applicant. When siting hazardous waste management facilities in these areas, overriding public service needs must be demonstrated by the applicant.
 - 2 No facilities should be located within critical habitats of endangered species, defined as areas known to be inhabited permanently or seasonally or known to be critical at any stage in the life cycle of any species of wildlife or vegetation identified or being considered for identification as "endangered" or "threatened" by the U.S. Department of the Interior or the State of California.

- 3 No facilities shall be located in wetlands.
 - 4 No facilities should be sited so as to preclude extraction of minerals necessary to sustain the economy of the State.
- The purpose of these criteria is to designate general areas only. Any proposed facility meeting the general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, regional, and local agencies; and the permitting processes and policies of the local jurisdictions. Larger scale maps and/or field investigations should be used to evaluate specific sites prior to permitting. In addition, local jurisdictions should be contacted to obtain information on local siting criteria and permitting processes. Local criteria may be more stringent than those included in this plan.

Figure 9-3

**ENVIRONMENTAL CRITERIA FOR SMALL-SCALE
TRANSFER AND STORAGE FACILITIES AND
INDUSTRIAL TRANSFER/STORAGE/
TREATMENT FACILITIES**

NOTE:

- 1 Prime agricultural lands under California law may not be used for urban purposes unless an overriding public need is demonstrated by the applicant. When siting hazardous waste management facilities in these areas, overriding public service needs must be demonstrated by the applicant.
- 2 No facilities should be located within critical habitats of endangered species, defined as areas known to be inhabited permanently or seasonally or known to be critical at any stage in the life cycle of any species of wildlife or vegetation identified or being considered for identification as "endangered" or "threatened" by the U.S. Department of the Interior or the State of California.

3 No facilities shall be located in wetlands.

4 No facilities should be sited so as to preclude extraction of minerals necessary to sustain the economy of the State.

The purpose of these criteria is to designate general areas only. Any proposed facility meeting the general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, regional, and local agencies; and the permitting processes and policies of the local jurisdictions. Larger scale maps and/or field investigations should be used to evaluate specific sites prior to permitting. In addition, local jurisdictions should be contacted to obtain information on local siting criteria and permitting processes. Local criteria may be more stringent than those included in this plan.

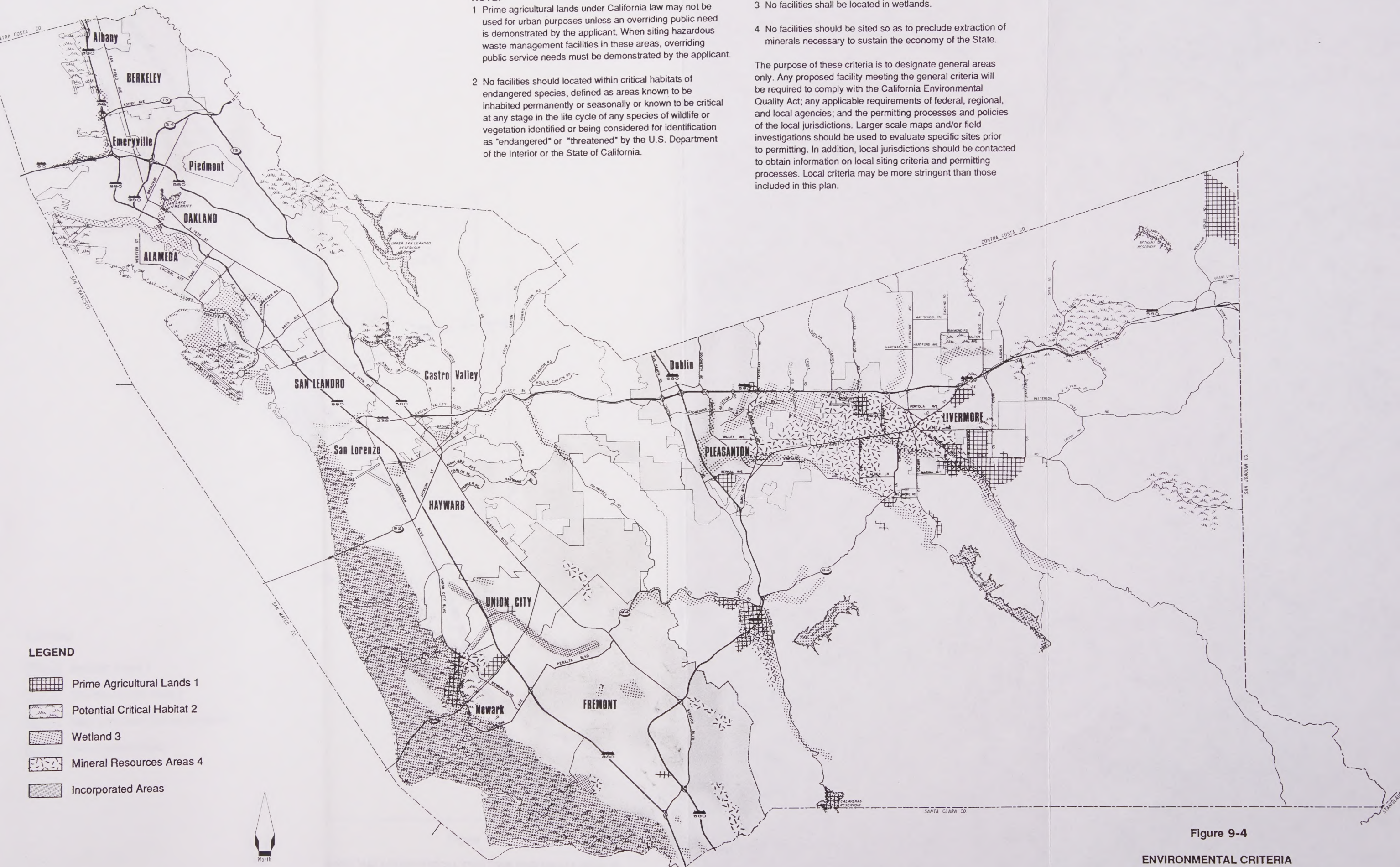


Figure 9-4

**ENVIRONMENTAL CRITERIA
FOR RESIDUALS REPOSITORIES**



NOTE:

- 1 No facilities shall be placed within 200 feet of an active or recently active fault.
- 2 May not be located in areas subject to 100-year flooding even with protection.
100-year flood plains and other flooding areas are defined to include inundation areas subject to flooding by dam or levee failure.

The purpose of these criteria is to designate general areas only. Any proposed facility meeting the general criteria will be required to comply with the California Environmental Quality Act; any applicable requirements of federal, regional, and local agencies; and the permitting processes and policies of the local jurisdictions. Larger scale maps and/or field investigations should be used to evaluate specific sites prior to permitting. In addition, local jurisdictions should be contacted to obtain information on local siting criteria and permitting processes. Local criteria may be more stringent than those included in this plan.

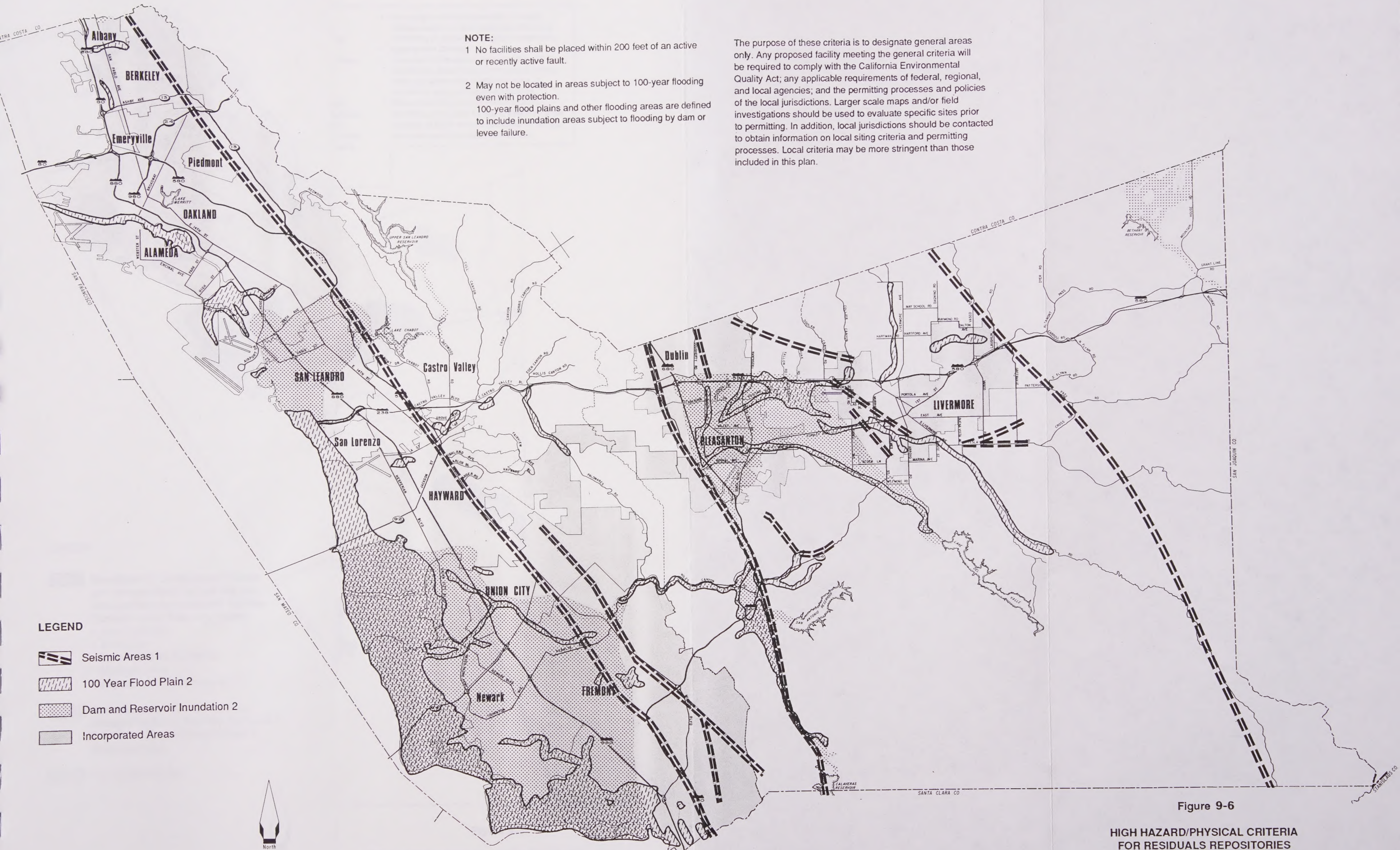


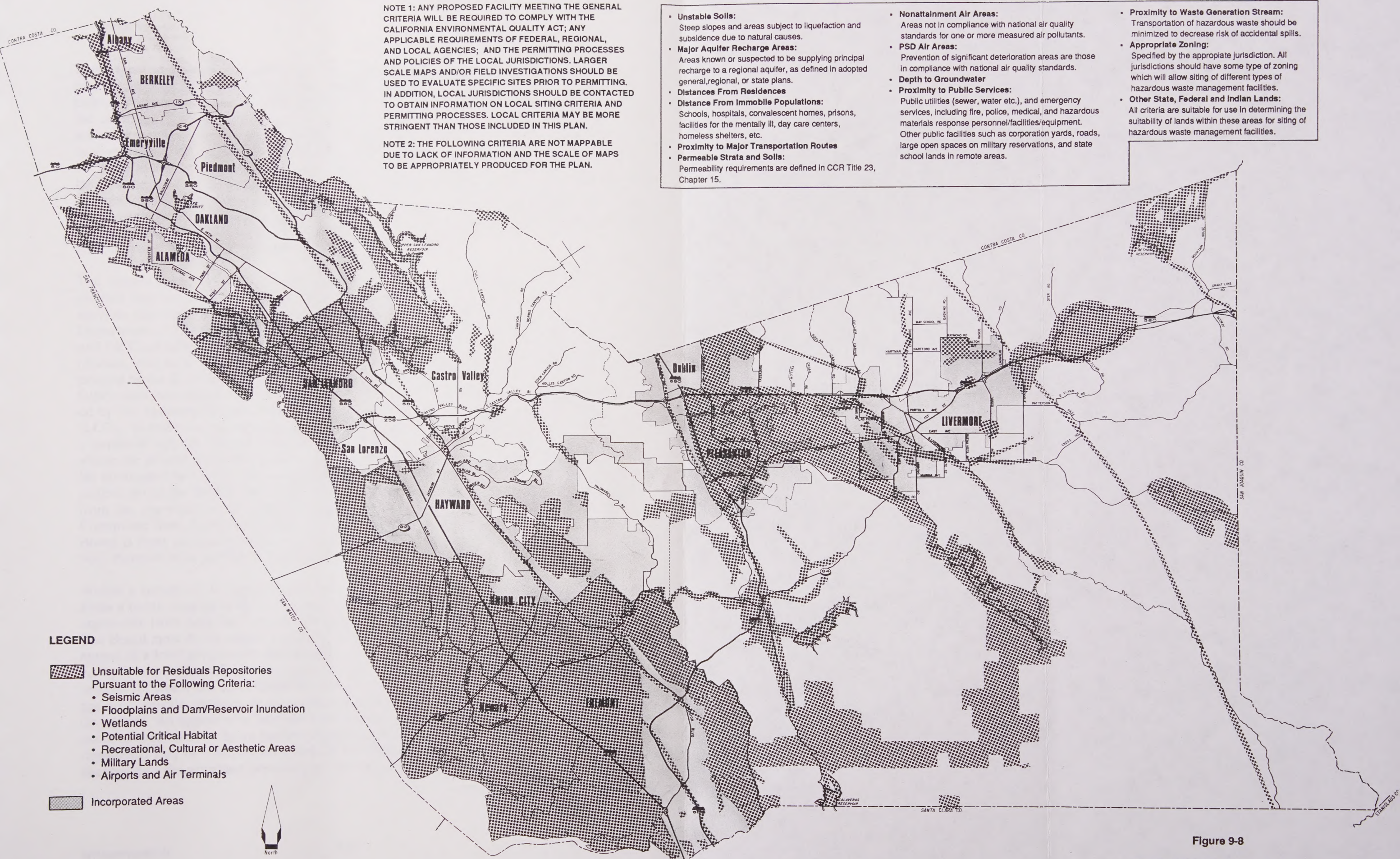
Figure 9-6

HIGH HAZARD/PHYSICAL CRITERIA FOR RESIDUALS REPOSITORIES



Figure 9-7

DESIGNATED GENERAL AREAS FOR SMALL-SCALE TRANSFER AND STORAGE FACILITIES AND INDUSTRIAL TRANSFER/ STORAGE/TREATMENT FACILITIES



NOTE 1: ANY PROPOSED FACILITY MEETING THE GENERAL CRITERIA WILL BE REQUIRED TO COMPLY WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT; ANY APPLICABLE REQUIREMENTS OF FEDERAL, REGIONAL, AND LOCAL AGENCIES; AND THE PERMITTING PROCESSES AND POLICIES OF THE LOCAL JURISDICTIONS. LARGER SCALE MAPS AND/OR FIELD INVESTIGATIONS SHOULD BE USED TO EVALUATE SPECIFIC SITES PRIOR TO PERMITTING. IN ADDITION, LOCAL JURISDICTIONS SHOULD BE CONTACTED TO OBTAIN INFORMATION ON LOCAL SITING CRITERIA AND PERMITTING PROCESSES. LOCAL CRITERIA MAY BE MORE STRINGENT THAN THOSE INCLUDED IN THIS PLAN.

NOTE 2: THE FOLLOWING CRITERIA ARE NOT MAPPABLE DUE TO LACK OF INFORMATION AND THE SCALE OF MAPS TO BE APPROPRIATELY PRODUCED FOR THE PLAN.

- **Unstable Soils:**
Steep slopes and areas subject to liquefaction and subsidence due to natural causes.
- **Major Aquifer Recharge Areas:**
Areas known or suspected to be supplying principal recharge to a regional aquifer, as defined in adopted general, regional, or state plans.
- **Distances From Residences**
- **Distance From Immobile Populations:**
Schools, hospitals, convalescent homes, prisons, facilities for the mentally ill, day care centers, homeless shelters, etc.
- **Proximity to Major Transportation Routes**
- **Permeable Strata and Soils:**
Permeability requirements are defined in CCR Title 23, Chapter 15.
- **Nonattainment Air Areas:**
Areas not in compliance with national air quality standards for one or more measured air pollutants.
- **PSD Air Areas:**
Prevention of significant deterioration areas are those in compliance with national air quality standards.
- **Depth to Groundwater**
- **Proximity to Public Services:**
Public utilities (sewer, water etc.), and emergency services, including fire, police, medical, and hazardous materials response personnel/facilities/equipment. Other public facilities such as corporation yards, roads, large open spaces on military reservations, and state school lands in remote areas.
- **Proximity to Waste Generation Stream:**
Transportation of hazardous waste should be minimized to decrease risk of accidental spills.
- **Appropriate Zoning:**
Specified by the appropriate jurisdiction. All jurisdictions should have some type of zoning which will allow siting of different types of hazardous waste management facilities.
- **Other State, Federal and Indian Lands:**
All criteria are suitable for use in determining the suitability of lands within these areas for siting of hazardous waste management facilities.

Figure 9-8
DESIGNATED GENERAL AREAS
FOR RESIDUALS REPOSITORIES

Three types of appeals are authorized. The developer can appeal a disapproval decision, or an approval decision with such onerous restrictions that it amounts to disapproval. Alternatively, an interested person can appeal an approval on the grounds that the conditions imposed on the project do not adequately protect the public health, safety, or welfare. An "interested person" is anyone who attended a public meeting or hearing held on the project's application for a local land-use decision. An appeal must be made to the Governor (or designee) within 30 days of the local jurisdiction's final land-use decision on the project. The Governor (or designee) must determine whether to authorize the appeal. In order for the appeal to be authorized, the developer must demonstrate that all permits required from state agencies which can be obtained prior to project construction have been obtained. Once those permits have been obtained and an appeal authorized, the state Appeal Board is constituted.

The Appeal Board consists of seven members, five of them permanent and two appointed only for a specific appeal. Three permanent members come from the state agencies that regulate hazardous waste management in California: the Director of the Department of Health Services, the Chair of the State Water Resources Control Board, and the Chair of the Air Resources Board. Two permanent members are local elected officials, who serve four-year terms: a member of a county board of supervisors appointed by the State Senate Committee on Rules from a list of nominees by the County Supervisors Association of California (CSAC), and a member of a city council appointed by the Assembly Speaker from a list nominated by the League of California Cities (LCC). In addition, two local elected officials are named to the Appeal Board to hear a particular appeal. One is a member of the Board of Supervisors from the county where the project would be located, and is appointed by the Assembly Speaker from a list nominated by CSAC. The other is a city council member from the city where the project would be located (or, if the facility is proposed for an unincorporated area, from the city which would be most directly affected), appointed by the Senate Rules Committee from the list nominated by LCC. If a permanent member of the Appeal Board is from the county where the project would be located, the temporary (i.e., ad hoc) member must be from a different county.

Within a month of an appeal being authorized by the governor, the Appeal Board holds a public hearing in the city or county where the project would be located to hear arguments from both the land-use authority and the developer (or interested party). The Board must decide within 15 days of this hearing whether to accept the appeal. An appeal of a local government disapproval of the developer's application may be accepted by a vote of four Board members if there is evidence that there are compelling reasons to review the local decision when weighing the reasons for the local decision against statewide, regional, or county hazardous waste management policies, goals, and objectives. An appeal of a land-use approval (by a developer appealing one or more onerous conditions, or by an interested party appealing a lack of adequately protective conditions) may be accepted by a vote of five Board members if there is a substantial likelihood of the appellant prevailing on the merits of its appeal.

If the Appeal Board accepts the appeal, it convenes a second hearing in the affected city or county to hear evidence. The statute provides a specific timetable for holding the hearing and issuing a decision; it also provides guidelines for deciding the appeal. The Board must adopt the rebuttable presumption that the local land-use decision was correct and supported by substantial reasons. To overturn a local land-use decision disapproving a project, the Board must make a number of mandatory findings which include: that the proposed project is consistent with the Plan, if one has been adopted by the county and approved by the state; that the project's environmental impacts will be mitigated; that the project, if not a land disposal unit, is consistent with the applicable general plan; and that alternative locations evaluated in the project EIR (and identified in the state-approved Hazardous Waste Management Plan) have been adequately considered. If the Appeal Board finds that one or more conditions imposed on the project by the land-use decision are so onerous and restrictive that the imposition is the same as a disapproval, or that one or more conditions necessary to protect public health, safety, or welfare should be imposed, it may approve the appeal and require the local government to modify its decision accordingly.

An Appeal Board decision overturning a local land use decision may be enforced by referral to the state Attorney General, if the local government does not modify its decision within 60 days.

SECTION IV IMPLEMENTATION STRATEGY

CHAPTER 10 HAZARDOUS WASTE IMPLEMENTATION PROGRAM

INTRODUCTION

This chapter explains the need for the implementation plan and details the short and long range plan, which are based on the policies in Chapter 2. The waste minimization program will be the top priority of the implementation plan. (See Policy 4) The plan calls for the cooperation of all segments of government, private industry and business, and the public. One of the key elements is education programs directed to all these groups.

TANNER LEGISLATION

Tanner legislation Article 3.5, Section 25135 (8) calls for "a schedule which describes county and city actions necessary to implement the hazardous waste management plan through the year 2000, including the assigning of dates for carrying out the action."

The implementation plan is based on this section of the legislation. In addition to the legislative requirement, it is incumbent upon local agencies, industry and the public to prepare and implement implementation plans as a means of protecting the public health and safety, protecting the environment and resources.

DHS GUIDELINES

Section 3.6 of the Guidelines calls for a description of the steps that will be taken to implement the goals and findings of the plan to include:

1. Schedules for specific actions and milestones, such as zoning changes, public hearings, actions needed by cities, etc.
2. The allocation of resources necessary to achieve the goals of the plan.
3. Plan updating and revision processes.
4. Identification of specific departments responsible for specific programs.
5. Other significant milestones identified in the plan.

IMPLEMENTATION PROCESS

After adoption of the final plan by the Authority, County, Cities and State, the implementation process will include:

1. Amendment of City and County General Plan.
2. Amendment of City and County zoning ordinances where necessary.
3. Continuance of Hazardous Waste Committee.
4. Establishment of Technical Committee.

PLAN POLICIES

Implementation policies called for in the Hazardous Waste Management Plan (Chapter 2) call for responsible management of hazardous wastes through the hierarchy (Policy 2).

1. Source reduction including toxics use reduction.
2. Reuse and recycling onsite.
3. Reuse and recycling offsite.
4. Treatment onsite.
5. Treatment offsite.
6. Incineration
7. Secure disposal of residuals from recycling treatment and incineration.

The basis for the hierarchy is prevention of pollution to the air, water and land through reduction of waste generation at the source. This is the major policy in regard to implementation of the plan--to reduce the waste as the means to reduce the need for facilities.

Plan Policy 3 calls for promotion, through education, assistance, and possible regulation of adoption and implementation of the hierarchy by firms in the county.

Firms wishing to locate in Alameda County or those wishing to extensively expand their facilities must demonstrate their commitment to hazardous materials use reduction as a condition for receiving land use approvals and business permits.

Plan Policy 4 states that source reduction and waste minimization are a top priority of the plan. Governmental agencies should encourage innovative private sector waste related activities and should act to remove barriers to reduction and recycling. New firms must demonstrate commitment to waste reduction as a condition for receiving land use and business permit approval. Local agencies and industry must work closely and cooperate in pursuing waste reduction and implementation of the hazardous waste management hierarchy.

Plan Policy 5 calls for onsite treatment in preference to offsite treatment as a means of reducing transportation of hazardous waste.

The Implementation Plan is based upon the above policies which should be reviewed in their entire context in Chapter 2.

SHORT AND LONG RANGE IMPLEMENTATION PLAN

The Implementation Plan will consist of a short range program that can be undertaken using existing resources and a long range plan that will depend upon additional funding. One of the functions of the short range plan will be to ferret out additional funding sources. The short-range program is scheduled to be carried out before 1990 and the long range program will be post-1990.

In both the short and long range program, the emphasis will be on education and waste minimization.

SHORT RANGE PROGRAM

ADMINISTRATION

The Waste Management Authority will be responsible for the short range program. The existing Hazardous Waste Committee composed of Authority members will oversee the Short Range Implementation Program to be developed by a new technical committee. The technical committee will consist of County, City, and District personnel. A committee of twelve is proposed as shown on the organization chart. City members would serve on a rotating basis. Representatives of the existing Fire Chiefs organization would serve on the committee and provide expertise in their area. Advisory to the technical committee will be federal, state and regional agencies, as well as experts from academic, industrial and environmental organizations. These agencies and experts will be invited to serve as experts on-call rather than as a formal organization. The public will be involved through the public referral, meeting and hearing process.

RESPONSIBILITY OF TECHNICAL COMMITTEE

The Technical Committee will be responsible for providing data and information to the Hazardous Waste Committee using their own expertise and input from federal, state, regional and local agencies as well as industry, environmental organizations and the public. The Technical Committee would be divided into subcommittees to produce elements of the short range work program.

The short range program would include studies and recommendations on the following:

1. Prepare details of short and long range programs.
2. Develop data collection and management system.

3. Set up process to work with industries on minimization program.
4. Review sources of funding, apply for funding.
5. Review legislation, prepare new legislation.
6. Prepare schedule for specific implementation actions and designate responsibilities.
7. Prepare studies and recommendations on:
 - Industrial and small generator waste minimization.
 - Household hazardous waste collection system.
 - Small generator hazardous waste collection system.
 - Hazardous waste collection depot.
 - Process of permitting sites.
 - Model Ordinance.
8. Develop inter-county agreements.
9. Prepare proposals for revising County HWM Plan.
10. Develop public education program.

In short range program implementation will begin as soon as it is approved by the Authority, the cities, and districts prior to state approval. (It is proposed that after initial Authority review and approval in principle, that the WMA staff ask agencies shown in the implementation plan to review it and make recommendations prior to final approval by the Authority and cities.)

RESOURCE AGENCIES

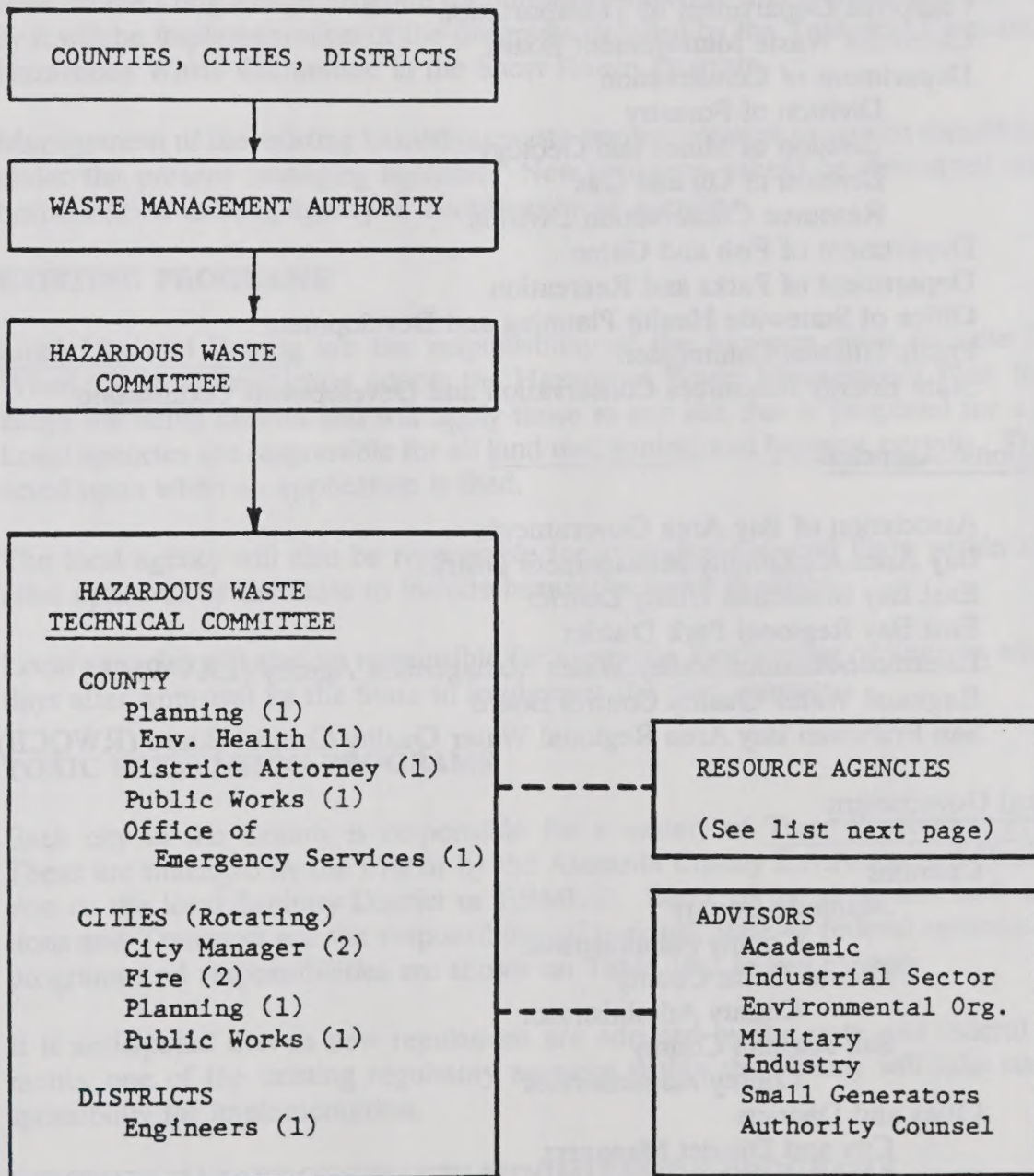
(Examples)

Federal Agencies

Department of Agriculture
Solid Conservation Service
Department of the Army
Department of Commerce
Economic Development Agency
Department of Energy
Department of the Interior
U.S. Fish and Wildlife Service
Bureau of Mines
U.S. Geological Service

TABLE 10-1

HAZARDOUS WASTE MANAGEMENT PLAN IMPLEMENTATION



Department of Transportation
Federal Highway Administration
Environmental Protection Agency
Federal Communications Commission

State Agencies

California Department of Transportation
California Waste Management Board
Department of Conservation
Division of Forestry
Division of Mines and Geology
Division of Oil and Gas
Resource Conservation Division
Department of Fish and Game
Department of Parks and Recreation
Office of Statewide Health Planning and Development
Public Utilities Commission
State Energy Resources Conservation and Development Commission

Regional Agencies

Association of Bay Area Governments
Bay Area Air Quality Management District
East Bay Municipal Utility District
East Bay Regional Park District
Livermore-Amador Valley Water Management Agency (LAVWMA)
Regional Water Quality Control Board
San Francisco Bay Area Regional Water Quality Control Board (RWQCB)

Local Government

Counties
Alameda County
County Administrator
Contra Costa County
County Administrator
San Joaquin County
County Administrator
Cities and Districts
City and District Managers
Water Supply and Flood Control
Alameda County Flood Control and Water Conservation District
Contra Costa County Flood Control and Water Conservation District
Local Water Suppliers
Public Services

Local Fire Protection Districts

LONG RANGE PROGRAM

The Technical Committee and Hazardous Waste Committee will prepare recommendations on the Long Range Program for Authority approval and implementation. Primarily it will be implementation of the programs detailed by the Technical Committee and Hazardous Waste Committee in the Short Range Program.

Management of the existing hazardous waste implementation programs should continue under the present managing agencies. New programs should be developed using the best qualified existing agency or coordination of agencies.

EXISTING PROGRAMS

Land Use and Zoning are the responsibility of the fourteen cities and the County. When the local jurisdiction adopts the Hazardous Waste Management Plan, they also adopt the siting criteria and will apply those to any site that is proposed for a facility. Local agencies are responsible for all land use, zoning, and business permits. These are acted upon when an application is filed.

The local agency will also be responsible for amending General Plans within 180 days after approval by the State to include hazardous waste facilities.

Local agencies will also be responsible for amending local zoning ordinances within 180 days after approval by the State to implement the plan changes.

TOXIC PREVENTION PROGRAMS

Each city in the County is responsible for a variety of Toxic Prevention Programs. These are managed by the City or by the Alameda County Environmental Health Division or the local Sanitary District or EBMUD. Some of the programs such as Emissions and Transport are the responsibility of regional, state or federal agencies. These programs and responsibilities are shown on Table 10-2 in this chapter.

It is anticipated that as new regulations are adopted by the state and federal governments, one of the existing regulatory agencies within the County will take on the responsibility for implementation.

EXISTING HAZARDOUS WASTE MINIMIZATION PROGRAMS

Under its Memorandum of Understanding with the State Department of Health Services Toxic Substance Control Division, the County Department of Environmental Health has begun implementing a three phase hazardous waste minimization project as

TABLE 10-2

TOXICS PREVENTION PROGRAMS - BY CITY

JURISDICTION REGULATORY PROGRAM															
	Alameda	Albany	Berkeley	Dublin	Emeryville	Fremont	Hayward	Livermore	Newark	Oakland	Piedmont	Pleasanton	San Leandro	Union City	Unincorporated areas
Underground Storage Tanks	EHD	EHD	City	EHD	EHD	City	City	EHD	City	EHD	EHD	City	City	City	EHD
Hazardous Materials Storage (Waters Bill)	EHD	EHD	City	EHD	EHD	City	City	EHD	City	EHD	EHD	City	EHD	City	EHD
Acutely Hazardous Materials (La Follette Bill)	EHD	EHD	City	EHD	EHD	City	City	EHD	City	EHD	EHD	City	EHD	City	EHD
Hazardous Waste Generator Inspections	(DHS; EHD)		City	(DHS Statewide for Federal "TSD" Facilities; EHD Countywide for Others)											
Industrial Waste Pretreat. Before Sewer Discharge	EB-MUD	EB-MUD	EB-MUD	San. Dist.	EB-MUD	San. Dist.	City	San. Dist.	San. Dist.	EB-MUD	EB-MUD	San. Dist.	City	San. Dist.	Varies
Toxic Air Emissions	(San Francisco Bay Area Air Quality Management District)														
Toxics from Solid Waste Facilities	(BAAQMD for Air Emissions; San Francisco Regional Water Quality Control Board)														
Hazardous Waste Transporters	(Federal Department of Transportation, CalTrans Rules; California Highway Patrol (highways) County Sheriff (unincorporated areas); City Police Departments; EHD)														

LEGEND: EHD - Alameda County Environmental Health Division

part of their countywide Hazardous Waste Management Program. The first phase is the education and inspection of generators to effect compliance and promote their interest and define their responsibilities to manage and reduce their hazardous wastes. The second phase is the establishment of a hazardous waste data base. The third phase will address the targeting of specific industries to develop and promote new and existing technologies for source reduction, recycling and treatment of hazardous waste generated and will be accompanied by an educational program identifying the responsibility of the generator as well as explaining the technologies available to the producers of hazardous waste.

In 1988, the City of Hayward began implementing a three-phase waste minimization program: education and outreach, technical assistance, and regulatory measures.

On February 27, 1989, the City of Albany adopted a resolution establishing an educational program to assist businesses in the reduction of their hazardous wastes.

New Programs

Data Collection and Management System

Alameda County staff have been involved with the Association of Bay Area Government and other counties in the Bay Area and with the State Department of Health to develop a regional hazardous waste data base. The existing program for collecting State manifested waste data is incomplete and out of date. A new statewide system is required. A program for collecting data regarding small quantity generators and household hazardous wastes needs to be developed.

These programs will start as soon as the Alameda County Technical Committee completes its short range program report on the best method to approach data collection and management systems. It will also be necessary to involve other counties in the Bay Area if a regional data system is desired and to work with a statewide organization to improve the State manifest system.

A program of the magnitude necessary to be of value to Bay Area Counties and ABAG will require funding by each of the participating jurisdictions. It may be necessary to have all 58 counties involved in a funding program to improve the statewide data system.

Hazardous Waste Minimization Program

The county will engage in a variety of activities designed to promote the incorporation of waste minimization techniques and strategies by county industries. These activities can be divided into three areas:

- Information dissemination and outreach
- Technical and financial assistance

- Regulatory measures

The county hazardous waste technical committee will review program options and develop a specific waste minimization implementation plan during the first six months of their work. A review of potential program options is included to guide the committee's planning activities.

Information Dissemination and Outreach

Educating hazardous waste generators about waste minimization strategies and techniques is the natural first step in a waste minimization program. The following list of 27 activities are some of the potential components of the county's educational effort. The technical committee will evaluate these options, along with any new options, in designing the county's educational effort. The technical committee will evaluate these options, along with any new options, in designing the county's information dissemination and outreach program.

27 Low Cost Ways to Promote Hazardous Waste Minimization Through Education and Outreach at the Local Government Level

1. Adopt a Resolution Supporting Hazardous Waste Minimization
2. Establish an Internal (Staff) Task Force
3. Adopt an Implementing Resolution Establishing a Low Cost Program
4. Encourage Local Business Leaders to Set Up Programs
5. Encourage Other Outside Organizations to Participate
6. Make a Specific, Written Request of Individual Companies
7. Recruit Volunteer(s) to Staff Effort
8. Compile and Promote Industry Success Stories
9. Publicly Recognize Achievements
10. Work with Engineering Firms
11. Organize an In-Plant Tour
12. Work with Local Media
13. Formally Declare a Hazardous Waste Minimization Week
14. Host a Waste Minimization Exhibition Fair
15. Establish a Blue Ribbon Task Force on Waste Minimization
16. Provide Public Education on Consumer Waste Reduction
17. Develop a Waste Minimization Library
18. Conduct a Series of Workshops
19. Compile and Distribute Information
20. Organize a Speakers Bureau
21. Disseminate a Newsletter
22. Develop a Local Slide Show or Video
23. Encourage Financial Assistance for Waste Minimization
24. Create Economic Incentives
25. Spur Development of Cooperative Ventures
26. Map Out Program to Reduce Waste Generated Internally

27. Include Waste Minimization Education as Part of Local Inspections

Technical and Financial Assistance

While Information dissemination and outreach activities are valuable, small businesses, in particular, do not often have the staff, technical expertise, or financial resources to implement waste minimization technologies. To counteract these limitations, the county will engage in technical and financial assistance activities that will be geared toward helping individual businesses incorporate waste minimization.

Many firms will need technical assistance to pursue source reduction opportunities successfully. Such assistance can take many forms, but is typically initiated through an onsite waste stream assessment or audit.

Low cost. The Authority or the county could provide encouragement and information to trade associations to enable their members to conduct waste minimization self-audits. "Milk-run" offsite recycle programs could be established to aggregate compatible wastes. Industry could be encouraged to loan staff time to the waste minimization group for conduct of waste minimization consultations, particularly to smaller firms.

As set out by another piece of new legislation (AB 1961, Farr), Alameda County may be able to draw on qualified students from the University of California, Berkeley to conduct low- and no-cost technical consultations. The source reduction group can also seek grant funding to sponsor waste minimization technical assistance demonstration projects in the county.

Moderate Cost. Using existing local staff in the Environmental Health Department, fire departments, and sanitary districts, preliminary waste minimization consultations could be provided to selected firms. These initial visits would provide surveys of waste reduction potential, insurance risk minimization studies, and so on, as well as referrals for more in-depth audits and plan development (by local consultants, perhaps). Alternatively, the new program could provide in-depth consultation on a per-request basis for a minimal fee.

Higher Cost. Alameda County can develop the capability to perform in-depth consultations for all requesting firms, conducted perhaps as an extension of existing inspection programs. Alternatively, consultations can be performed by additional staff or through retained consulting firms. The hazardous materials information and consulting service authorized by AB 2490 could carry out this function, funded by fees to its clients.

Both technical assistance programs and information dissemination programs require a certain level of knowledge about the types and quantities of wastes being generated, who is generating them, and what management practices they are employing. The current sources of information--DHS manifests, and local inspection generated data--are fragmented. In order to establish an accurate baseline and to then be able to mon-

itor progress of waste minimization programs, a new data management system is required.

Economic Incentives and Financial Assistance

Money is almost always required to translate a firm's motivation for source reduction into action; not necessarily large sums of money, but sizeable sums still for many small businesses. Special financing assistance for larger firms is not a particular concern of local governments, and therefore is not addressed in this section. Small businesses, however, often face severe cash flow constraints, and do not have an easy time obtaining loans on attractive terms. Each small firm's source reduction program needs to be based on a sound waste audit, costing perhaps from \$1,000 to \$5,000. Selected analyses of particular waste streams may add to these costs. Decisions must then be made on how to alter existing processes to reduce volumes or toxicity of hazardous waste generation; detailed engineering designs may then be needed. Permits may be required to carry out certain kinds of changes: permits from DHS or BAAQMD, perhaps, and more likely from the County Environmental Health Department, or sewer agency or fire department. Finally, it costs money to make the desired changes in the manufacturing process itself: replumbing a production system; adding new tanks and pipes to separate waste streams; purchase of recycling equipment or waste reduction systems; and so on.

Regulatory Measures

Appropriate regulations can be adopted by the county and cities of the county that will provide waste minimization incentives to businesses and, to a lesser extent, force businesses to consider waste minimization technologies.

State and federal legislators already have adopted a variety of regulatory requirements intended to force source reduction and waste minimization--but few of these recent adoptions have been fully implemented (see Chapter 5). Most sweeping are the requirements in both the 1984 Hazardous and Solid Waste Amendments (HSWA) to the Federal Resource Conservation and Recovery Act (RCRA), and the 1985 California Farr Bill (AB 685) that hazardous waste generators develop onsite waste minimization programs. In addition, Proposition 65, passed 2:1 by the voters in 1986, is sharply increasing pressures on firms to reduce, or even eliminate, their use of certain designated chemicals. Even before full implementation of these existing laws, new proposals are under consideration to mandate even stricter requirements (e.g., SB 714 (Roberti)).

Alameda County implementors can exercise their discretion to accelerate local implementation of these many programs, or even to extend their stringency. In considering any such regulatory program, it is valuable to remember that any technical standards generally are easier to meet as design criteria in new facilities than as retrofit criteria imposed on existing facilities. Because of these simple facts, many experts believe that proposed new industrial and commercial facilities can be held to stricter standards regarding source reduction (akin to New Source Performance Standards under the

Clean Air Act). Indeed, by enforcing strict regulatory measures over all future facilities, Alameda County can have continued growth without concomitant increases in hazardous waste generation.

Low Cost. Require all Alameda County generators, phasing in over time from the largest to the smallest, to submit the waste minimization plans mandated by the federal RCRA, and by California's Farr Bill (AB 685). This periodic information could be used to encourage firms to achieve maximum source reduction results.

The county could also require approval of a waste minimization plan as a prerequisite for a firm's waste minimization loan. Alternatively, agencies might negotiate lower penalties in pending enforcement litigation if a firm takes action to pursue aggressive source reduction activities. With the cooperation of the Alameda County District Attorney, or city attorneys, firms could negotiate payment of their fines into a county Waste Minimization Fund rather than into the general treasury.

Moderate Cost. Alameda County and the 14 cities could act in concert under this plan to require all industrial applicants for new land use permits to include aggressive measures to adopt the hazardous waste management hierarchy. Similar ordinances already exist in Contra Costa and Santa Cruz Counties.

Existing firms in Alameda County could be required to submit waste minimization plans, which could include changes in purchasing to favor non-hazardous materials. On public grounds the county could encourage integrated pest management techniques as an alternative to pesticide use. Either of these activities will require additional efforts to develop and administer the new standards.

Higher Cost. Firms could be required to negotiate waste minimization agreements either with individual cities, sanitary districts, or the county as a precondition for permit or business license approval. Agencies could require generators to submit specific detailed generation data such as mass balances, percentage of inputs recycled, and so on. Agencies could establish waste minimization target goals and performance standards for each industry category, adjusting appropriate regulatory compliance phase-in periods depending upon the degree of goal achievement.

The waste minimization program will not be limited to the options described above. A subcommittee of the Technical Committee will prepare the background work and work with industry and technical organizations to determine the best available technology for waste minimization and adapt the program to the needs of industry in the County. Information from a variety of sources, including San Diego, Santa Clara and Contra Costa Counties' Hazardous Waste Management Plans, will be used to develop a detailed waste minimization program.

Small Business Generator Program

A similar waste minimization program will be aimed at the small generator. Representatives of each category of small quantity generators will be asked to work with the Technical Committee to help develop a program. In some of the larger cities a separate program may be established.

The effort of this program will be educational and will be undertaken by existing enforcement agencies.

Household Hazardous Waste

The Technical Committee will prepare a study on this aspect of the hazardous waste plan within six months of establishment. The goals of this program are to establish collection site(s) to serve all households in the County and to serve the very small quantity generator who has no other disposal options available. The example of the San Francisco Hazardous Waste collection facility will be studied to see if it is adaptable to Alameda County. Initial funding to start the program will be studied by the Technical Committee.

The second part of the program is the public education program described in the following section.

Public Education Program

Again the Technical Committee will work out details of the public education program aimed at each household, business and industry in the County. An important component is the need to start an education program in the schools. The review of program needs will take place within six months of establishment of the Technical Committee. Existing programs will be reviewed and the assistance of community organizations will be sought.

The Long Range Program will include funds for a public education position and printed materials. The source of funding will be determined by the Technical Committee.

Funding

One of the major tasks of the Technical Committee will be to review sources of funding for implementation of the Hazardous Waste Plan. All available funding sources, including state and federal sources will be thoroughly explored.

Administrative Funding

Short range implementation would utilize existing staff resources to coordinate the program; the long range program will require funds for both the Authority staff and agency staff to implement the plan.

The Authority and other local agencies, counties and cities should seek legislation to provide State funding to implement the plan and to prepare a revised hazardous waste plan based on revised data. State technical assistance should be sought to help Authority and local staff to implement the plan. In addition, industry representation should assist in funding the implementation plan and/or providing technical assistance.

The Technical Committee will review all possible sources of funding for the implementation program. Among the techniques are assessment of hazardous waste generators or an assessment district to include all industrial users. One county has assessed every property in the county, apparently on the assumption that every property owner is a potential hazardous waste generator.

Funding For Industrial Generators

Existing legislation will be implemented by industrial generators. It is assumed that these large businesses will fund their own programs either through savings or waste reduction or through price increases to customers. Industry, often through industrial associates, shares information on waste reduction and re-use techniques. The Technical Committee can also share in this informational coordination process.

Funding For Small Businesses

The Technical Committee may be able to assist small businesses with information on how to fund waste minimization or re-use programs. The Committee will review State loan and grant programs, seek assistance from larger industry, use assessment district funds, or request help from the Small Business Administration.

The Technical Committee will develop a program to assist small business to locate funding sources.

ADMINISTRATION

Short Range

The Waste Minimization Authority should act as the short range administrator of the Hazardous Waste Management Plan Implementation Program. The Authority Administrator should set up the short range program as outlined on the organizational chart. One staff person should be assigned to hazardous waste implementation, including setting regular meetings of the Technical Committee and providing staff support to the Technical Committee. The individual should be skilled in hazardous waste management technology and procedures.

A major portion of the work would be to get the short-range implementation program underway. The revision to the Hazardous Waste Management Plan should be started immediately after approval by local government agencies using more current data than that available in the preparation of the initial plan.

Long Range

The long range program should be under the general direction of the Authority, which will recognize that the major responsibility of the program belongs to the local agencies, specifically the County and the cities. There are many agencies involved, each carrying out its designated responsibility. The role of the Authority would be to keep current on all of these activities through the Technical Committee. The only actions the Authority would take would be to amend the Hazardous Waste Management Plan.

The Authority's role could expand to recommending to local jurisdictions means of funding the countywide program, and could be responsible for public education.

It is recommended that initially the Authority assume the role of overall coordinator of the long range program and assign the Technical Committee to work out a program for permanent long range implementation to be a part of the revised Hazardous Waste Management Plan. It is recommended that the plan revisions begin in 1989 after approval of the initial plan by local agencies and as soon as the Technical Committee is in place.

TABLE 10-3

IMPLEMENTATION PROGRAM
SHORT RANGE

<u>Program Task</u>	<u>Responsible Agency</u>	<u>Implementation Dates</u>	<u>Estimated Cost</u>	<u>Source of Funds</u>
<u>Implementation</u>				
Organization of technical committee	WMA	Appointing agencies	Jan-June 1989	Staff time Existing funds
Retain H.W. Coordinator	WMA	HWCom/WMA	Start July 1989	\$50,000/up incl. support Tech Com. to rec.
Amendment of General Plans and Zoning	Local Agencies	County and cities	Est. July-Dec 1989 (180 days after DHS approval)	Staff time Existing funds
Short range Plan work program and schedule	WMA	Tech Com HW Com WMA Local agencies	June 1989 July 1989 August 1989 Aug-Dec 1989	Staff time Existing funds
Public Education and Outreach Program	WMA	Tech Com HW Com WMA	June 1989 July 1989 August 1989 Sept 1989 - Ongoing	Staff time Exist.funds Suppl. by Grants/ Contrib./ Assessment
Data Management System Review	WMA	Tech Com	June 1989	Staff time Existing funds
Intercounty Agreements	WMA	HW Coord Tech Com HW Com WMA Other counties	July 1989 July 1989 Aug 1989 Sep 1989 Ongoing	Staff time Tech Com to recom
Funding Program	WMA	Tech Com HW Com	July 1989 Aug 1989	Staff time Tech Com to recom

TABLE 10-3, Page 2

IMPLEMENTATION PROGRAM
SHORT RANGE

<u>Program Task</u>		<u>Responsible Agency</u>	<u>Implementation Dates</u>	<u>Estimated Cost</u>	<u>Source of Funds</u>
<u>Implementation</u>					<u>Program</u>
Waste Minimization Program Outline	WMA	Tech Com	June 1989	Staff time	Existing Funds
		HW Com	July 1989		
		WMA	July 1989		
Draft Waste Minimization Ordinance	WMA	HW Coord	July 1989	Staff time	Existing Funds
		Tech Com	August 1989		
		HW Com	August 1989		
		WMA	August 1989		
		Local Agencies	Sept 1989		Coord Salary
Technical Assistance Program Outline	WMA	HW Coord	Aug 1989	Staff time	Existing Funds
		Tech Com	Sept 1989		
		HW Com	Sept 1989		
		WMA	Sept 1989		
		Local Agencies	Oct 1989		Coord Salary
Waste Minimization Program for Existing Generators	WMA	HW Coord	Sept 1989	Staff time	Existing Funds
		Tech Com	Sept 1989		
		HW Com	Oct 1989		
		WMA	Oct 1989		
		Local Agencies	Nov 1989		Suppl. by Grants/Contrib./Assess.
Household H.W. Program Outline and Procedures	WMA	HW Coord	Oct 1989	Staff time	Existing Funds
		Tech Com	Oct 1989		
		HW Com	Nov 1989		
		WMA	Dec 1989		
					Coord Salary
Household H.W. Program Implementation	WMA	HW Coord	Jan 1990	To be developed	Grants/Contrib./Assess.
		Tech Com	Jan 1990		
		HW Com	Feb 1990		
		WMA	Mar 1990		

TABLE 10-3, Page 3

IMPLEMENTATION PROGRAM
SHORT RANGE

<u>Program Task</u>	<u>Responsible Agency</u>	<u>Implementation Dates</u>	<u>Estimated Cost</u>	<u>Source of Funds</u>
<u>Implementation</u>				<u>Program</u>
Plan Update	WMA	HW Coord	1989	
		HW Staff	1989	Staff time
		Tech Com	1989	Grants/ Contrib./
		HW Com	1989	Assess.
		WMA		

TABLE 10-4
IMPLEMENTATION PROGRAM
LONG RANGE

<u>Program Task</u>	<u>Responsible Agency</u>		<u>Implementation Dates</u>	<u>Estimated Cost</u>	<u>Source of Funds</u>
<u>Implementation</u>					<u>Program</u>
Data Management System	WMA	HW Coord Tech Com	Ongoing	Varies	To be Determined
Plan Updates	WMA	HW Coord Tech Com HW Com	Ongoing	Varies	To be Determined
Applications for Facilities	Local Agency Local Asses. Com	Local staff	Ongoing	Varies	Applicant Charges for Services

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